[MS-OFORMS]:

Office Forms Binary File Formats

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Revision Summary

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6/27/2008	1.0	New	First release
1/16/2009	1.01	Minor	Updated the Intellectual Property Rights Notice
7/13/2009	1.02	Major	Changes made for template compliance
8/28/2009	1.03	Editorial	Revised and edited the technical content
11/6/2009	1.04	Editorial	Revised and edited the technical content
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4/16/2024	8.0	Major	Significantly changed the technical content.
5/21/2024	8.1	Minor	Clarified the meaning of the technical content.
8/20/2024	9.0	Major	Significantly changed the technical content.

Table of Contents

1 Introduction

The Office Forms Binary File Formats Structure specifies the Office Forms Binary File Formats. This file format applies to Office Forms. Office Forms are a collection of controls that can be embedded in client applications and stored as part of a file. Office Forms controls can be used to provide additional interactive surfaces, such as command buttons, check boxes, or option buttons, to the user. The client application provides the location and requests the type of persistence; the structure of the persistence is determined by Office Forms for binary formats and by the client application for text formats.

Sections 1.7 and 2 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

accelerator key: Any combination of keys that are pressed simultaneously to run a command.

ActiveX control: A reusable software control, such as a check box or button, that uses ActiveX technology and provides options to users or runs macros or scripts that automate a task. See also ActiveX object.

ASCII: The American Standard Code for Information Interchange (ASCII) is an 8-bit character-encoding scheme based on the English alphabet. ASCII codes represent text in computers, communications equipment, and other devices that work with text. ASCII refers to a single 8-bit ASCII character or an array of 8-bit ASCII characters with the high bit of each character set to zero.

big-endian: Multiple-byte values that are byte-ordered with the most significant byte stored in the memory location with the lowest address.

Boolean: An operation or expression that can be evaluated only as either true or false.

cell: A box that is formed by the intersection of a row and a column in a worksheet or a table. A cell can contain numbers, strings, and formulas, and various formats can be applied to that data.

character pitch: A quality that measures the number of characters that can be printed in a horizontal inch. Pitch is typically used to measure monospace fonts.

character set: A mapping between the characters of a written language and the values that are used to represent those characters to a computer.

class identifier (CLSID): A **GUID** that identifies a software component; for instance, a DCOM object class or a COM class.

color palette: A collection of colors that is available to format text, shapes, cells, and chart elements.

datasheet: A worksheet window that contains the source data for a Microsoft Graph chart object.

dual interface: An interface that can act either as a dispinterface or a Distributed Component Object Model (DCOM) interface.

dynamic virtual table: An ordered array that contains pointers to virtual functions.

font family: A set of fonts that all have common stroke width and serif characteristics. For example, Times Roman and Times Roman Italic are members of the same font family.

globally unique identifier (GUID): A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value. Specifically, the use of this term does not imply or require that the algorithms described in [RFC4122] or [C706] have to be used for generating the GUID. See also universally unique identifier (UUID).

hanzi: A set of ideograms that is used to write Traditional Chinese and Simplified Chinese. The set is also referred to as kanji in the Japanese writing system and Hanja in the Korean writing system.

HIMETRIC: A metric mapping mode in which each logical unit is .01 mm.

IDispatch identifier (DispID): A 32-bit signed integer that is used in Automation interfaces to identify methods, properties, and arguments.

Input Method Editor (IME): An application that is used to enter characters in written Asian languages by using a standard 101-key keyboard. An IME consists of both an engine that converts keystrokes into phonetic and ideographic characters and a dictionary of commonly used ideographic words.

license key: An array of bytes that enables access to a control according to the usage policies for that control.

little-endian: Multiple-byte values that are byte-ordered with the least significant byte stored in the memory location with the lowest address.

macro: A set of instructions that are recorded or written, and then typically saved to a file. When a macro is run, all of the instructions are performed automatically.

persist: The process of storing data in a memory medium that does not require electricity to maintain the data that it stores. Examples of such mediums are hard disks, CDs, non-volatile RAM, and memory sticks.

point: A unit of measurement for fonts and spacing. A point is equal to 1/72 of an inch.

property bag: A name/value pair that stores a property of a control or object, typically by using the IPropertyBag interface.

range: An addressable region that is in a workbook. A range typically consists of zero or more cells and represents a single, contiguous rectangle of cells on a single sheet.

storage: An element of a compound file that is a unit of containment for one or more storages and streams, analogous to directories in a file system, as described in [MS-CFB].

stream: An element of a compound file, as described in [MS-CFB]. A stream contains a sequence of bytes that can be read from or written to by an application, and they can exist only in storages.

system palette: An itemization of all of the colors that can be displayed by the operating system for a device.

twip: A unit of measurement that is used in typesetting and desktop publishing. It equals one-twentieth of a printer's point, or 1/1440 of an inch.

type information: A collection of information that describes the characteristics and capabilities of an object, including the properties, events, and methods for the object.

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [UNICODE5.0.0/2007]

provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

variant type: An unsigned 16-bit integer that indicates the data type of a variant, as described in [MS-OAUT].

worksheet: A single logical container for a set of tabular data and other objects in a workbook.

MAY, SHOULD, MUST, SHOULD NOT, MUST NOT: These terms (in all caps) are used as defined in [RFC2119]. All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the Errata.

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[GIF89a] CompuServe Incorporated, "Graphics Interchange Format(sm)", Graphics Interchange Format Programming Reference, July 1990, http://www.w3.org/Graphics/GIF/spec-gif89a.txt

[JFIF] Hamilton, E., "JPEG File Interchange Format, Version 1.02", September 1992, http://www.w3.org/Graphics/JPEG/jfif.txt

[MC-IcoWin32] John Hornick, "Icons in Win32", September 29, 1995, http://msdn.microsoft.com/en-us/library/ms997538.aspx

[MS-DTYP] Microsoft Corporation, "Windows Data Types".

[MS-EMF] Microsoft Corporation, "Enhanced Metafile Format".

[MS-OAUT] Microsoft Corporation, "OLE Automation Protocol".

[MS-OLEDS] Microsoft Corporation, "Object Linking and Embedding (OLE) Data Structures".

[MS-OSHARED] Microsoft Corporation, "Office Common Data Types and Objects Structures".

[MS-WMF] Microsoft Corporation, "Windows Metafile Format".

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, https://www.rfc-editor.org/info/rfc2119

[RFC4234] Crocker, D., Ed., and Overell, P., "Augmented BNF for Syntax Specifications: ABNF", RFC 4234, October 2005, https://www.rfc-editor.org/info/rfc4234

1.2.2 Informative References

[ECMA-376] ECMA International, "Office Open XML File Formats", https://www.ecma-international.org/publications-and-standards/standards/ecma-376/

[MS-CFB] Microsoft Corporation, "Compound File Binary File Format".

[MS-DOC] Microsoft Corporation, "Word (.doc) Binary File Format".

[MS-OVBA] Microsoft Corporation, "Office VBA File Format Structure".

[MS-PPT] Microsoft Corporation, "PowerPoint (.ppt) Binary File Format".

[MS-XLSB] Microsoft Corporation, "Excel (.xlsb) Binary File Format".

[MS-XLS] Microsoft Corporation, "Excel Binary File Format (.xls) Structure".

[MSDN-IDPD] Microsoft Corporation, "Interpreting Data Packet Diagrams", http://msdn.microsoft.com/en-us/library/aa506210.aspx

[MSDN-IPersistStream] Microsoft Corporation, "IPersistStream interface", http://msdn.microsoft.com/en-us/library/ms690091.aspx

[MSDN-IPropertyBag] Microsoft Corporation, "IPropertyBag", http://msdn.microsoft.com/en-us/library/aa908373.aspx

[MSDN-IStorage] Microsoft Corporation, "IStorage Interface", http://msdn.microsoft.com/en-us/library/aa380015.aspx

[MSDN-IStream] Microsoft Corporation, "IStream interface", http://msdn.microsoft.com/en-us/library/aa380034.aspx

1.3 Overview

1.3.1 Office Forms

Office Forms is a set of **ActiveX controls** that provide interactive surfaces to the user. The characteristics and behaviors of the controls are determined by the application that parses the binary file. Controls can be embedded directly into an application document or into another control. In both cases, they **persist** with the same structure. This section illustrates one way to use and display Office Forms controls.

1.3.1.1 UserForm

The **UserForm** control (section 2.2.10) is a form or a custom dialog box that obtains information from a user. Other controls can be added to the **UserForm** control to display labels, provide areas for user input of text, display drop-down selection boxes, display buttons, and perform other actions, including actions that are triggered by user interaction.

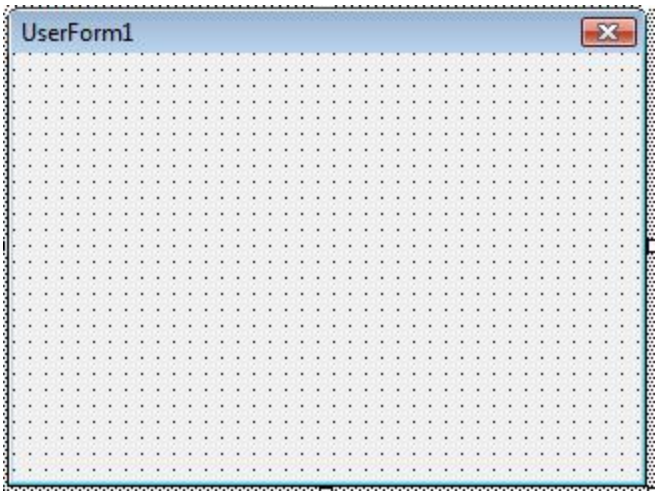


Figure 1: UserForm control

1.3.1.2 Frame

The **Frame** control (section 2.2.2) is a rectangular box with an optional label that groups controls into one visual unit. It can force mutually exclusive values among controls such as **OptionButton** controls (section 2.2.5) or **CheckBox** controls (section 2.2.5) in the frame.

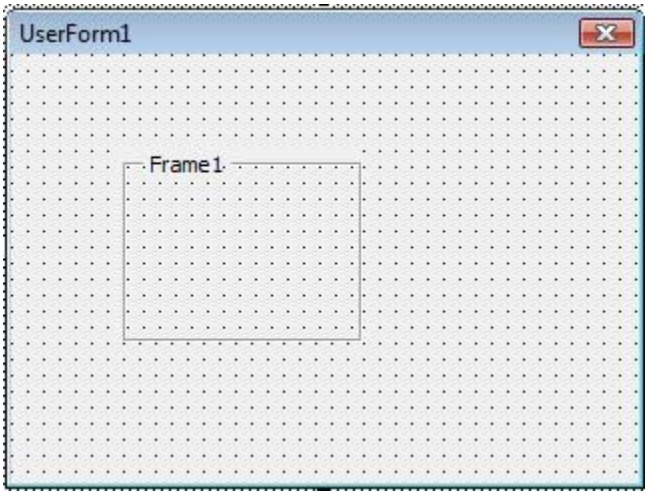


Figure 2: Frame control

1.3.1.3 CheckBox

The **CheckBox** control (section 2.2.5) toggles a value that indicates an opposite and unambiguous choice. It has three possible states: selected, cleared, and neither selected nor cleared, meaning a combination of on and off states.

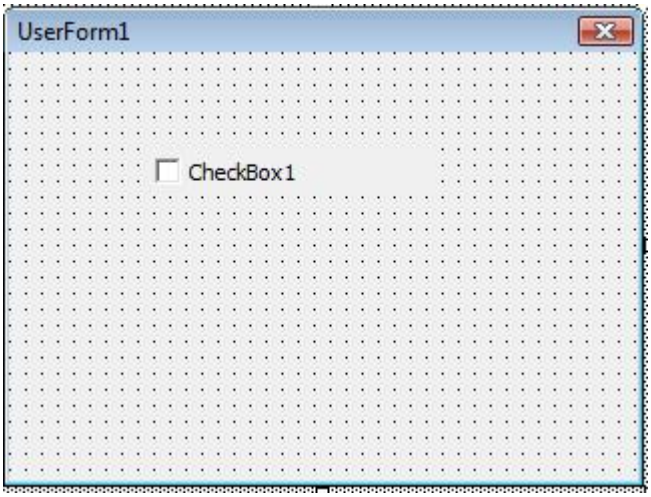


Figure 3: CheckBox control

1.3.1.4 ComboBox

The **ComboBox** control (section 2.2.5) combines a **TextBox** (section 2.2.5) with a **ListBox** (section 2.2.5) to create a drop-down list box. Clicking the drop button on the side of the **TextBox** displays the list of items. Users can type a value, which can be restricted to the list, or they can choose an item from the list to enter a value.

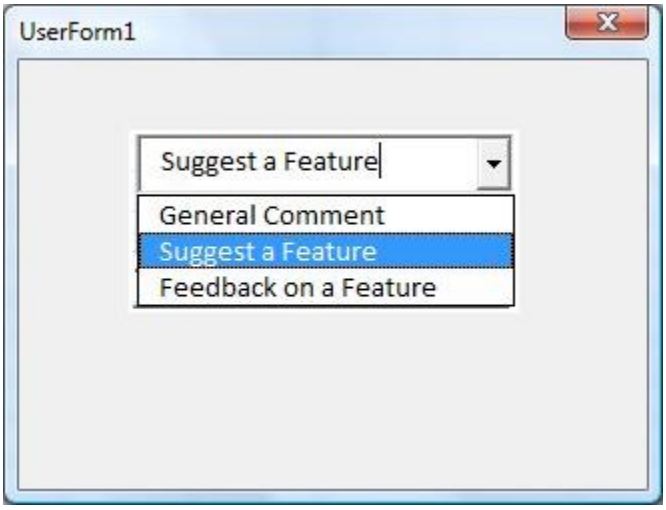


Figure 4: ComboBox control

1.3.1.5 ListBox

The **ListBox** control (section 2.2.5) displays a list of one or more items of text from which a user can choose.

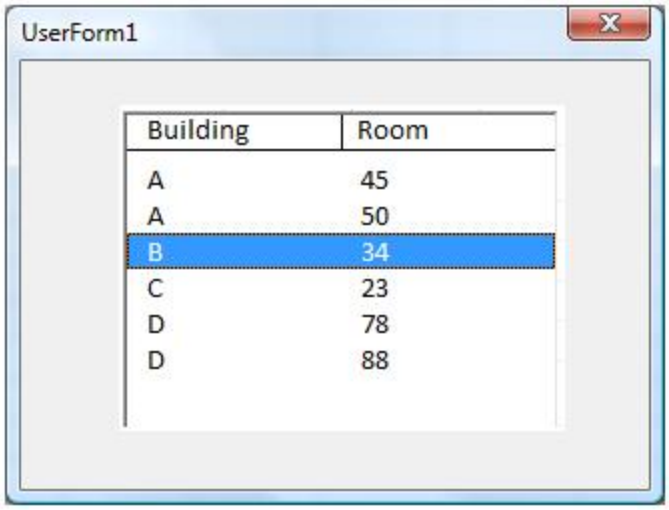


Figure 5: ListBox control

1.3.1.6 OptionButton

The **OptionButton** control (section 2.2.5) enables a single choice in a limited set of mutually exclusive choices in a **GroupName** (section 2.5.36) or in a **Frame** control (section 2.2.2). It has three possible states: selected, cleared, and neither selected nor cleared, meaning a combination of on and off states. An **OptionButton** is also referred to as a radio button.

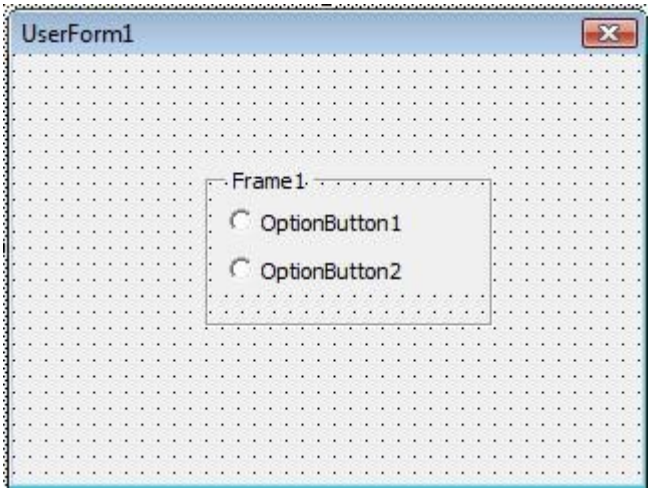


Figure 6: OptionButton controls in a Frame

1.3.1.7 TextBox

The **TextBox** control (section 2.2.5) displays text from an organized set of data or user input.

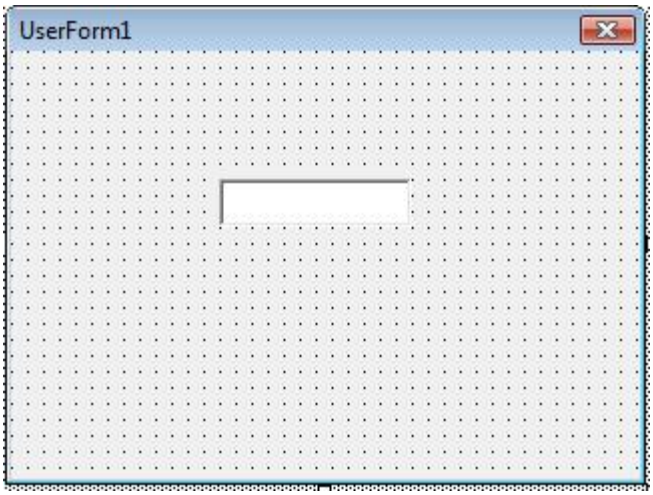


Figure 7: TextBox control

1.3.1.8 ToggleButton

The **ToggleButton** control (section 2.2.5) indicates a state, such as Yes/No, or a mode, such as On/Off. It alternates between an enabled and disabled state when it is clicked.

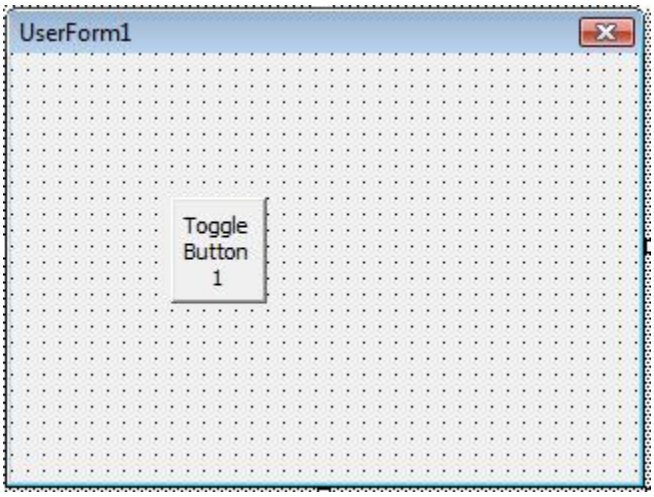


Figure 8: ToggleButton control

1.3.1.9 CommandButton

The **CommandButton** control structure (section 2.2.1) runs a **macro** that performs an action when a user clicks it. A **CommandButton** is also referred to as a push button.

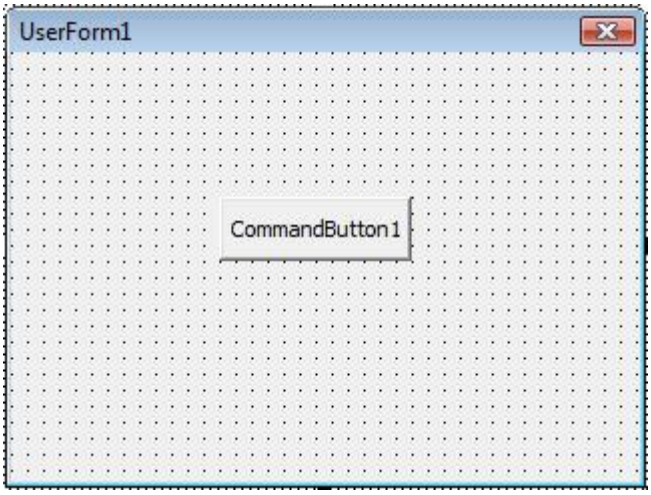


Figure 9: CommandButton control

1.3.1.10 Image

The **Image** control (section 2.2.3) is used to display a picture.

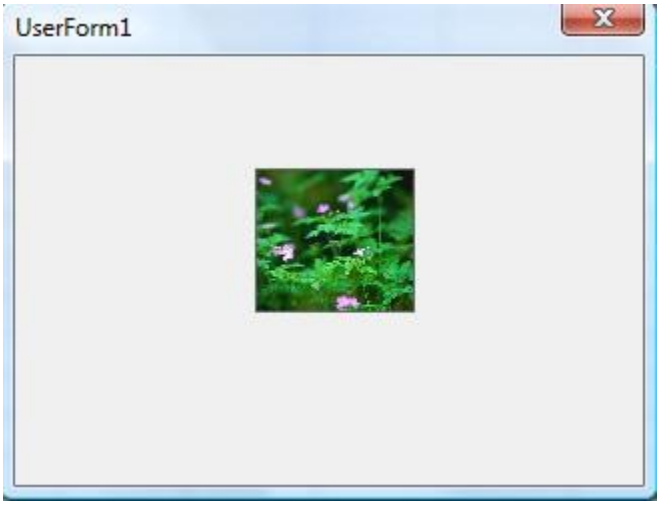


Figure 10: Image control

1.3.1.11 Label

The **Label** control (section 2.2.4) displays text that identifies the purpose of a control such as a **TextBox** (section 2.2.5), displays descriptive text, or provides brief instructions.

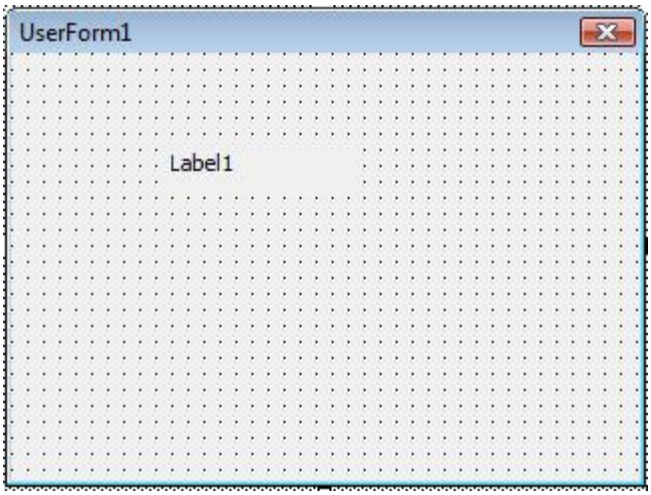


Figure 11: Label control

1.3.1.12 TabStrip

The **TabStrip** control (section 2.2.9) presents a set of related controls as a visual group. It displays different sets of information for related controls. It contains a collection of one or more tabs in which each tab is selectable by the user. Each tab shows different values for the controls that are in the **TabStrip** control.

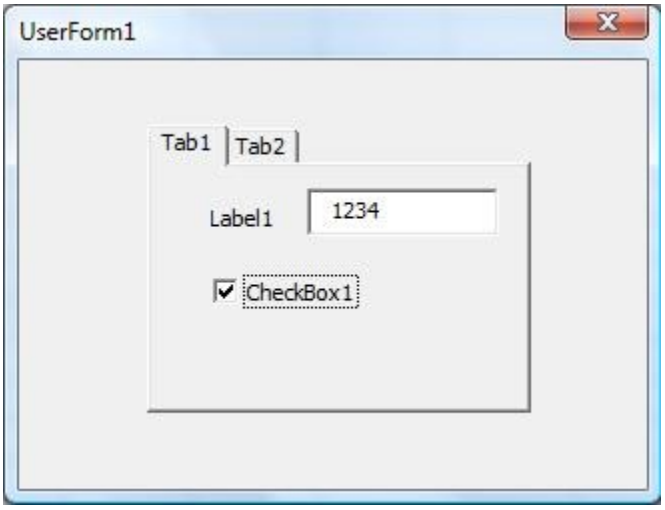


Figure 12: TabStrip control, first tab selected

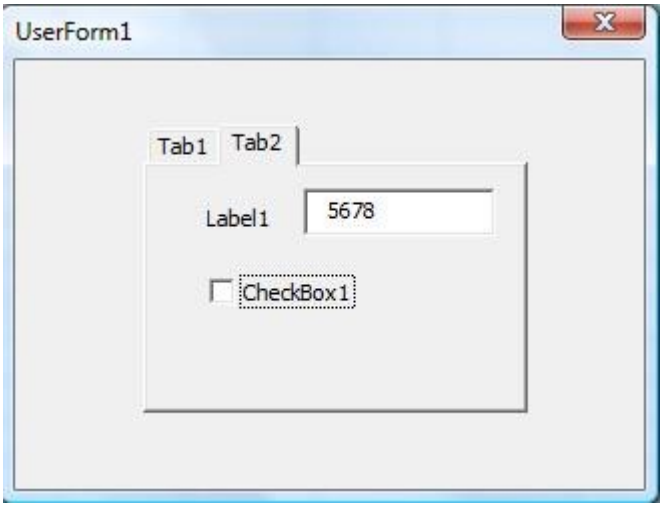


Figure 13: TabStrip control, second tab selected

1.3.1.13 ScrollBar

The **ScrollBar** control (section 2.2.7) scrolls through a range of values when a user clicks the scroll arrows, or jumps to a value when the user drags the scroll box. The value jumps past a preset range when the user clicks the area between the scroll box and either of the scroll arrows. The user can use the value of the **ScrollBar** control to set the value of another control, such as a **TextBox** (section 2.2.5).

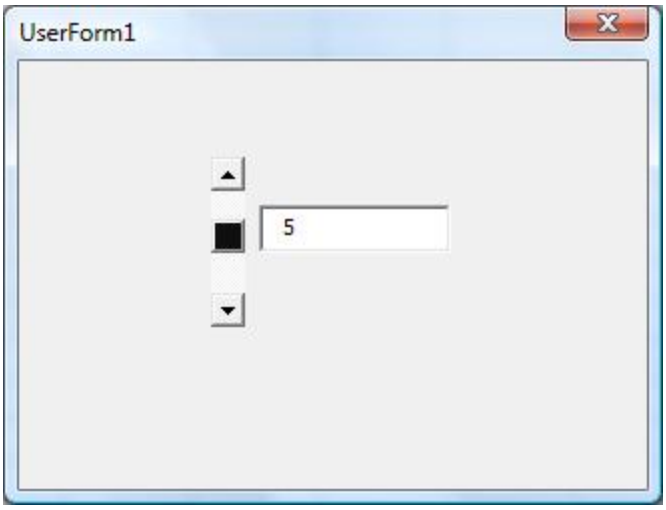


Figure 14: ScrollBar control

1.3.1.14 SpinButton

The **SpinButton** control (section 2.2.8) increases or decreases a value, such as a number, time, or date. A user increases the value by clicking the up arrow and decreases the value by clicking the down arrow. A user can use the value of the **SpinButton** control to set the value of another control, such as a **TextBox** (section 2.2.5).

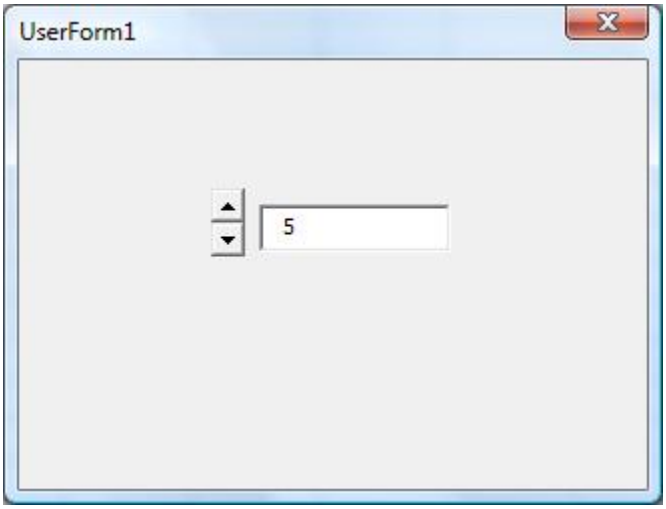


Figure 15: SpinButton control

1.3.1.15 MultiPage

The **MultiPage** control (section 2.1.2.3) presents multiple screens of information as a single set. It contains a collection of one or more pages in which each page is a **UserForm** (section 2.2.10) that contains its own controls and can have a unique layout. Each page is associated with a tab on which the user can click to display the page and its contents.

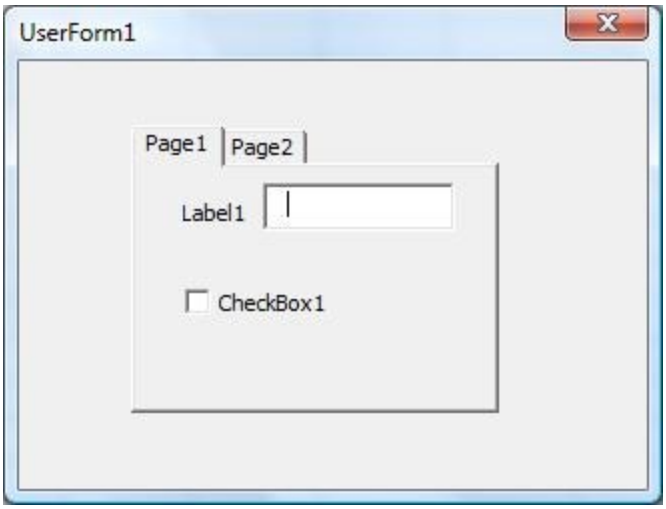


Figure 16: MultiPage control, first page selected

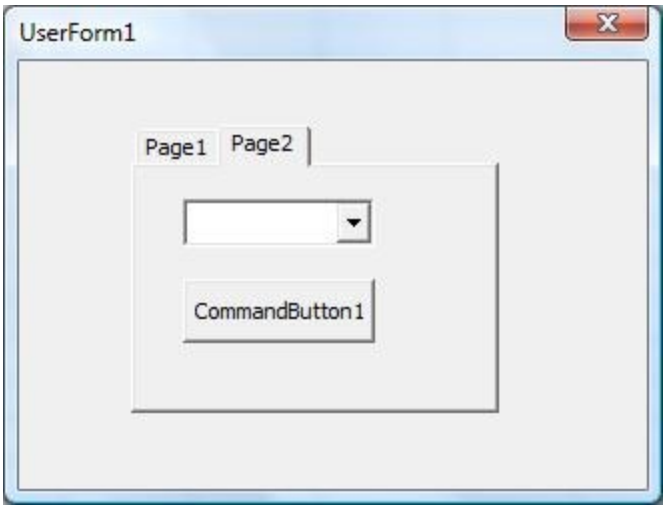


Figure 17: MultiPage control, second page selected

1.3.2 Saving Controls

Office Forms controls can be stored by serializing control properties to an **IStream** interface, an **IStorage** interface, or an **IPropertyBag** interface. For more information about these interfaces, see [MSDN-IStream], [MSDN-IStorage], and [MSDN-IPropertyBag], respectively. Parent controls, that is, controls that can contain other controls are stored to an **IStorage** interface. Non-parent controls that are not embedded in another control can be saved to any of the three interfaces.

All Office Forms controls can be saved to PowerPoint, Word, and Excel file formats, as well as any other file types that support the **IStorage** and **IStream** interfaces. For more information about the PowerPoint, Word, and Excel binary formats, see [MS-PPT], [MS-DOC], and [MS-XLS], respectively. For information about Excel Binary File Format (.xlsb), see [MS-XLSB]. Excel Binary File Format (.xlsb) also supports **IPropertyBag**, so non-parent controls that are not embedded in another control can be saved to that file format using **IPropertyBag**.

Each client application provides the desired interface to Office Forms. This document describes how Office Forms are written to these interfaces. It does not describe how the bytes are saved to disk; that format is determined by the client application.

The rest of this section describes how controls are saved to the **IStream** and **IStorage** formats.

1.3.2.1 Control Properties

Office Forms controls are stored as collections of property values. Any information required to identify the control is stored by the client application. For example, the client application can write the **class identifier (CLSID)** of the control, which is a **GUID**, to the **stream** before passing it to the control. For more information about the GUID type, see [MS-DTYP].

If a client application requests that a non-parent Office Forms control be saved to a **storage**, Office Forms creates a stream named "contents" under the storage provided by the client application and **persists** the control to that stream in the same way that it would persist to any **IStream** object.

Once an Office Forms control is given or creates a stream object, the control properties are stored in a fixed format. Metadata is stored about the properties, including flags to indicate which properties are stored. Properties that are 4 bytes or smaller in size are stored sequentially in the **DataBlock**, followed by larger properties in the **ExtraData** block. Properties that are stored using the **IPersistStream** interface are stored in **StreamData**. For more information about **IPersistStream**, see [MSDN-IPersistStream]. The following figure illustrates this layout.

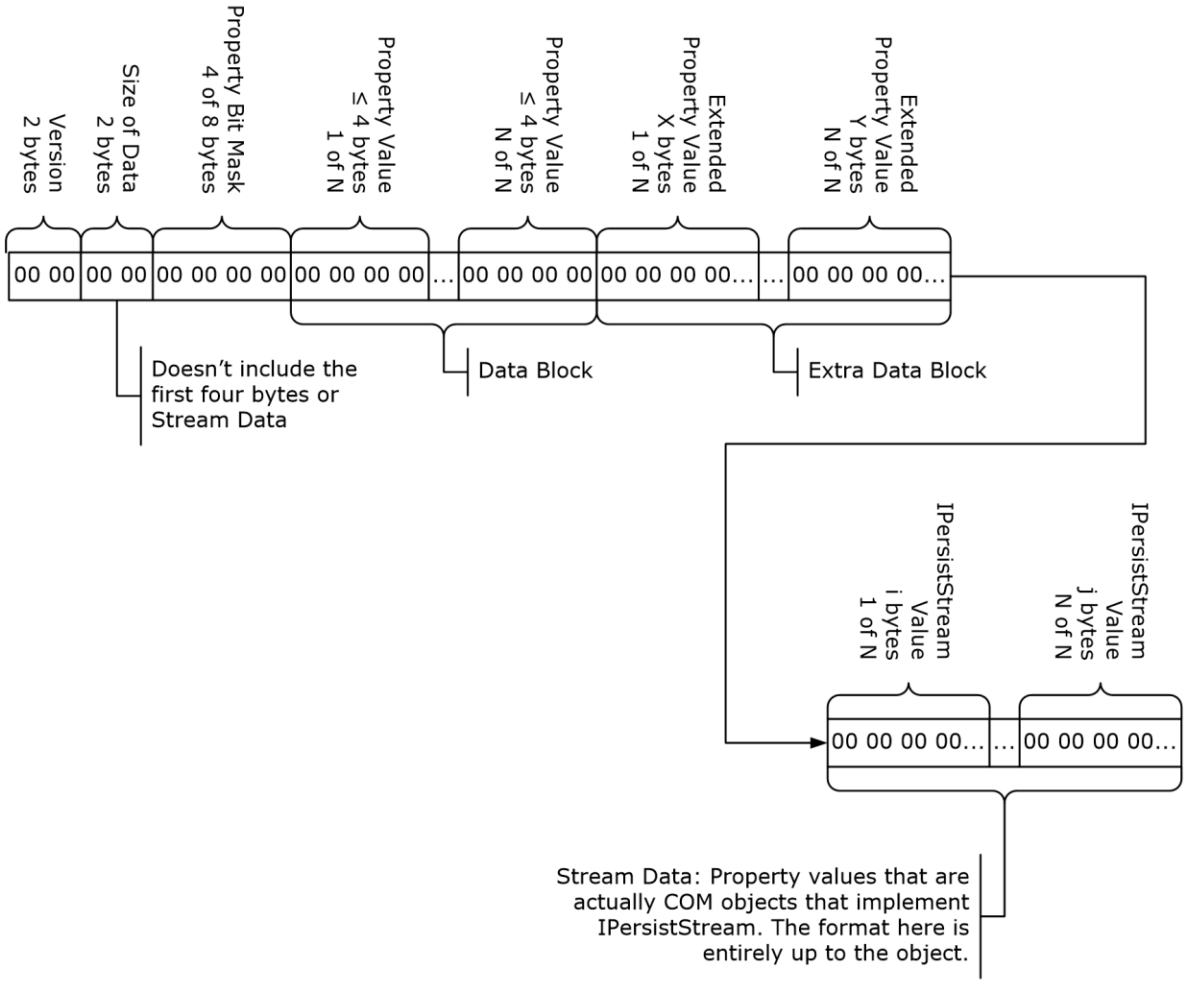


Figure 18: Control structure without additional data

Some controls store additional data, which is not depicted in this figure. Any additional data is stored in the stream directly following this format. Many controls store **TextProps** (section 2.3.1) immediately following **StreamData**. The **TextProps** structure follows the pattern illustrated in this figure. These additional data structures are specified in the section specific to the applicable control.

1.3.2.2 Parent Controls

Parent controls are those, such as Frame, that can contain other controls. These controls are considered parents whether or not they contain embedded controls. The structure of a parent control consists of multiple **streams** in one **storage**. The following figure illustrates this layout.

The first stream, named "f", is the **Form stream** (section 2.1.2.1.1). The **Form** stream contains the properties of the parent control, followed by the **ClassTable** (section 2.2.10.10), which stores information about control types that are used by embedded controls and are unknown to the parent control. Following the **ClassTable**, the **Sites** array (section 1.3.2.2.2) of the **FormSiteData** (section 2.2.10.6) stores information about each control embedded in the parent control. Following the **Sites** array (section 1.3.2.2.2), the **DesignExtender** (section 2.2.10.11) stores properties of the design surface of the parent control. The **ClassTable** (section 2.2.10.10) and **DesignExtender** (section 2.2.10.11) are both optional and are not stored if not needed.

The second stream, named "o", is the **Object stream** (section 2.1.2.2.1). The **Object** stream contains the properties of each embedded child control, persisted as described in section 1.3.2.1. Embedded child controls cannot be parent controls. Embedded parent controls are described in section 1.3.2.3.

The **CompObj** stream (section 2.1.2.4) holds information about the parent control and clipboard formats.

Parent controls can create other streams in addition to the **Form stream** (section 2.1.2.1.1) and **Object stream** (section 2.1.2.2.1), as long as the additional streams have names unique to their storage.

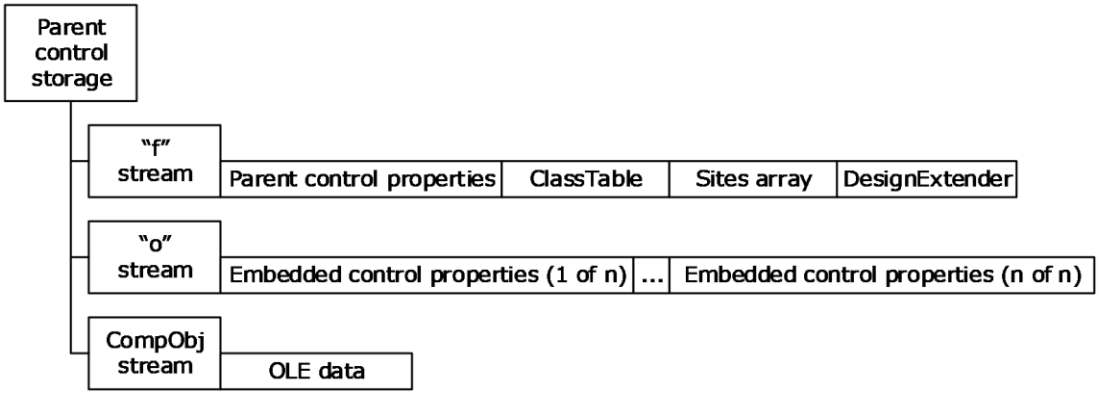


Figure 19: Parent control structure

1.3.2.2.1 ClassTable

The format of the **ClassTable** element in the **Form stream** (section 2.1.2.1.1) is a count of classes, followed sequentially by information about each class.

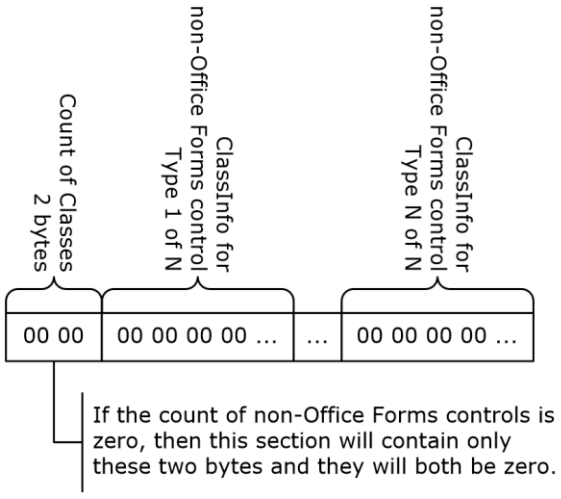


Figure 20: ClassTable structure

1.3.2.2.2 Sites Array

The format of the **Sites** array, as illustrated in the following figure, is a count of embedded controls, followed by the size of the embedded control information, an array describing the types, and an array describing each site.

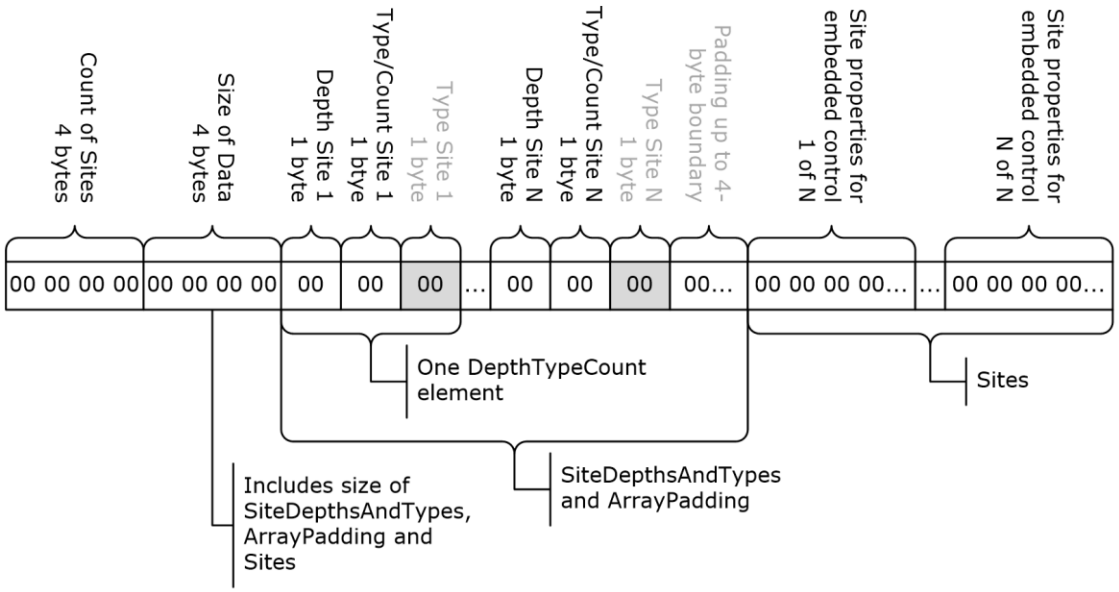


Figure 21: Sites array

The **SiteDepthsAndTypes** array, as illustrated in the previous figure, stores the depth as specified in section 2.2.10.7 and type of each embedded control. Each entry is 2 or 3 bytes long, depending on whether two consecutive controls are of the same OLE type. If two or more controls of the same type occur in order, only one entry is used. That entry includes a count, as well as the depth and type. The array is padded to a length that is divisible by 4. The **Sites** array in the previous figure is an array of **OleSiteConcreteControl** structures (section 2.2.10.12), one for each embedded control.

1.3.2.3 Embedded Parent Controls

An embedded control can also be a parent control to control(s) embedded in it. In that case, the properties of the embedded parent control are not stored in the parent **Object stream** (section 2.1.2.2.1) with the information about its siblings, but rather as a **storage** contained by the parent control storage. Each embedded parent control is still accounted for in the parent **SiteDepthsAndTypes** array, as described in section 1.3.2.2.2.

The **Page** control (section 2.1.2.3.1) is an example of an embedded parent control. It exists only within a **MultiPage** control (section 2.1.2.3), and each **Page** control is a **UserForm** (section 2.2.10) that exists as a storage with its own **streams** that **persist** **FormControl** (section 2.2.10.1) properties and information about its child controls. Properties of the **Page** control independent of the **UserForm**, are stored by its parent **MultiPage** control. The **MultiPage** control adds the "x" stream to hold its **MultiPageProperties** (section 2.2.6) and the **PageProperties** (section 2.2.6.4) of each of its **Pages**.

The following figure illustrates these structures.

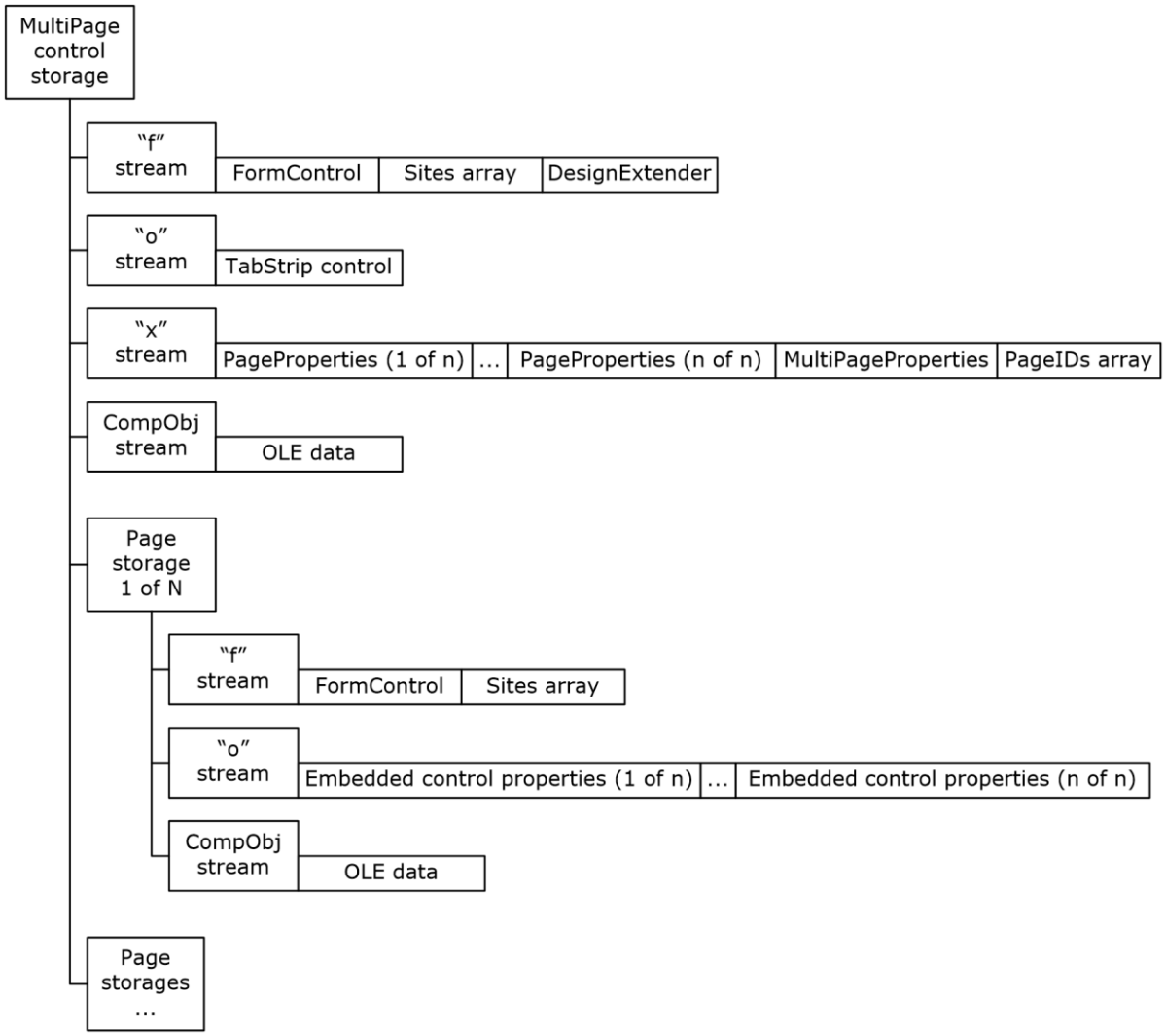


Figure 22: MultiPage control structure

1.3.3 Byte Ordering

Data in this file format is stored in **little-endian** format.

Some computer architectures number bytes in a binary word from left to right, which is referred to as **big-endian**. The packet diagrams specified in [MSDN-IDPD] for this documentation are big-endian. Other architectures number the bytes in a binary word from right to left, which is referred to as little-endian. The underlying file format enumerations, objects, and records are little-endian.

Using big-endian and little-endian methods, the number 0x12345678 would be stored as shown in the following table.

Byte order	Byte 0	Byte 1	Byte 2	Byte 3
Big-endian	0x12	0x34	0x56	0x78

Little-endian	0x78	0x56	0x34	0x12

1.4 Relationship to Protocols and Other Structures

This file format is used as part of a host persistence format that specifies how and where the structures specified in this document are persisted. This structure is dependent on the host persistence formats specified in the following references:

- [MS-PPT] for the persistence format for presentations.
- [MS-DOC] for the persistence format for word-processing documents.
- [MS-XLS] and [MS-XLSB] for the persistence formats for spreadsheets.
- [MS-OVBA] for the persistence format of a code project.

The host persistence format also specifies whether this structure is persisted in binary or text format. For example, if the host specifies persisting Office Forms controls in text format, it also specifies a **property bag** [MSDN-IPropertyBag] into which to **persist** those properties.

If the host persistence format specifies persisting Office Forms controls in binary format, it also specifies a **stream** [MSDN-IStream] or **storage** [MSDN-IStorage] into which to persist those properties, as specified by the Compound File Binary File Format [MS-CFB].

The OLE Automation Protocol, as specified in [MS-OAUT], is used to embed **ActiveX controls** that are not specified in this document.

1.5 Applicability Statement

This document specifies a persistence format for Office Forms **ActiveX controls**. The controls typically represent different ways of communicating information or receiving user input through a window or dialog box.

This persistence format provides interoperability with applications that create or read documents conforming to this structure.<1>

1.6 Versioning and Localization

This document covers versioning issues in the following areas:

- **Structure Versions:** There is only one version of the Office Forms structure.
- **Localization:** This structure defines no locale-specific processes or data.

1.7 Vendor-Extensible Fields

The Office Forms structure does not define any vendor extensible fields.

2 Structures

2.1 File Structure

Controls can be persisted to a file in two ways: binary format or text format. Text format is specified in section 2.1.1.1. Binary format is specified in section 2.1.1.2 and the following sections.

Unless otherwise specified, section 2.1.1.2 and following refer to binary format.

NOTE: In this document, the word *property* refers specifically to named properties specified in section 2.5. Each property has a file format default, which is the value of the property if the property is not stored. This value MUST NOT be persisted.

2.1.1 Control Storage Format

Controls are stored to a file by persisting properties of the control and other control-specific information. For each control structure in section 2.2, a specified set of properties applies and other properties MUST NOT be persisted.

2.1.1.1 Persistence to a Property Bag

Non-parent controls cannot contain other controls. If non-parent controls are not embedded in other controls, they can be persisted to a **property bag**. The location and format of the control in the file is specified by the client application that stores it.

Parent controls can contain other controls. They cannot be persisted to a property bag; they MUST be persisted to a **storage** as specified in section 2.1.2.1. Consequently, controls that are embedded in another control cannot be persisted to a property bag. They MUST be persisted as specified in section 2.1.2.2.

2.1.1.1.1 Control-specific Properties

A control that is persisted to a **property bag** is saved as a series of name-value pairs, where the first element in the pair is the name of a property that applies to the control, and the second element in the pair is the text representation of that property value in that control. The properties, their names, their meanings, and the controls to which they apply are specified in section 2.5.

The format of the text representation of properties is specified in section 2.1.1.1.3. Properties that are not stored in a list and have the same value as the file format default MUST NOT be stored. Storage of properties in a list is specified in section 2.1.1.1.3.6.

2.1.1.1.2 Additional Persisted Properties

In addition to the properties in section 2.5 that apply to a control, certain controls save other properties, as specified in the following subsections. These additional properties MUST be stored in the same **property bag** as the control-specific properties.

2.1.1.1.2.1 TextProps

The following controls, when persisted to a **property bag**, also store properties that apply to TextProps in section 2.5:

- CheckBox
- ComboBox
- CommandButton

- Label
- ListBox
- OptionButton
- TabStrip
- TextBox
- ToggleButton

2.1.1.1.2.2 TabFlagData

The TabStrip control, when persisted to a **property bag**, also stores a property named "TabState", which specifies the state of each tab. The value of this property MUST contain exactly one **TabFlag** for each tab and MUST conform to the following Augmented Backus-Naur Form (ABNF) [RFC4234] grammar:

```
TabState = *1(TabFlags)

TabFlags = TabFlag *(";" TabFlag)
```

TabFlag: Specifies the state of a tab with one of the values in the following table.

Value	Meaning
0	The tab is neither visible nor enabled.
1	The tab is visible but not enabled.
2	The tab is enabled, but not visible.
3	The tab is both visible and enabled.

2.1.1.1.3 Property Value Formats

2.1.1.1.3.1 Number Properties

Numeric properties are saved as the text representation of unsigned decimal integers. The property value MUST be in the range from zero through 4294967295. The text representation MUST conform to the following ABNF [RFC4234] grammar:

```
UINT32 = 1*10ASCII-DIGIT
```

ASCII-DIGIT is specified in [MS-OSHARED] section 2.1.

The text representation is determined using the following algorithm:

1. Treat the property value as an unsigned 32-bit integer, **Value**.
2. Allocate a string buffer, **String**, with room for at least 11 characters.
3. Set the **CurrentCharacter** pointer to point to the beginning of **String**.
4. Set **FirstDigit** pointer to point to the beginning of **String**.
5. Repeat steps 5.1 through 5.4 until **Value** is equal to zero.

1. Set an unsigned 32-bit integer **DigitValue** to **Value** modulo 10.
2. Set **Value** to **Value** divided by 10.
3. Set the character pointed to by **CurrentCharacter** to **DigitValue** plus 48, which is the numeric value of the character '0'.
4. Increment **CurrentCharacter** to point to the next character in **String**.

6. Set the character pointed to by **CurrentCharacter** to zero (NULL).
7. Decrement **CurrentCharacter** to point to the previous character in **String**.
8. Repeat steps 8.1 through 8.3 until **FirstDigit** points to a character in **String** past the character to which **CurrentCharacter** points.
    1. Swap the values of the characters pointed to by **FirstDigit** and **CurrentCharacter**.
    2. Increment **FirstDigit** to point to the next character in **String**.
    3. Decrement **CurrentCharacter** to point to the previous character in **String**.

2.1.1.1.3.2 Boolean Properties

Boolean properties are stored as a text representation that MUST conform to the following ABNF [RFC4234] grammar:

```
BOOL = "0" / "-1"
```

The possible meanings of **BOOL** are specified in the following table.

Value	Meaning
0	FALSE
-1	TRUE

2.1.1.1.3.3 Point Properties

Properties that are a pair of numbers, which can represent height and width or a pair of coordinates, are saved as a semicolon-delimited list. The text representation MUST conform to the following ABNF [RFC4234] grammar:

```
POINT = UINT32 ";" UINT32
```

2.1.1.1.3.4 Picture Properties

Properties that are pictures are persisted as a **variant type** of VT_UNKNOWN. The location and format of the stored binary value are defined by the client application requesting that the control be persisted.

2.1.1.1.3.5 String Properties

Properties that are strings are saved as **Unicode** strings with a **variant type** of VT_BSTR. Empty strings are valid values. String property values that are persisted to a **property bag** are not compressed or padded and MUST conform to the following ABNF [RFC4234] grammar:

```
STRING = *(UTF16-ANY)
```

UTF16-ANY is specified in [MS-OSHARED] section 2.1.

2.1.1.1.3.6 Lists of Properties

TabStrip controls have properties that can have a different value for each tab. Values for these properties MUST be stored and MUST be persisted as a semicolon-delimited list. The list MUST have an entry for each tab and MUST be ordered, with the first element in each list corresponding to the first tab, and so on.

Lists MUST conform to the following ABNF [RFC4234] grammar:

```
LIST   = *(VALUE ";")

VALUE  = UINT32 / STRING / BOOL
```

2.1.1.2 Persistence to a Stream

The location of a control within the structure of the file to which it is persisted is specified by the client application that provides the **stream**. The exact format of each control as persisted to a stream is specified in section 2.2.

Each control that is persisted to a stream has the same general structure, as follows:

1. Version number
2. Size
3. Property mask
4. Property values
5. Other data

2.1.1.2.1 Property Mask

The property mask is a 4-byte or 8-byte bit field that specifies the property values of a control that are persisted. Each property that applies to a control is represented by a bit in the property mask of that control. Some bits in each property mask are unused, as specified per control in section 2.2. The lowest-order used bit in a property mask specifies whether the property to which it corresponds, which would be persisted first, is in fact stored, and the highest-order used bit specifies the presence of the property that would be persisted last.

The value of each used bit specifies whether the corresponding property of the control has a value that is different from the file format default for that property; that is, whether it is stored. Properties that are not stored in an array and have the same value as the file format default MUST NOT be stored. Storage of properties in an array is specified in section 2.1.1.2.5.

2.1.1.2.2 Property Values

Property values are persisted in up to three groups. In the first group, all property values that are less than or equal to 4 bytes in size are stored in the order in which they are referenced by the property mask. This group is the **DataBlock** of the control. Property values that are greater than 4 bytes in size, but are not font or picture properties, are stored in the order in which they are referenced by the property mask. This group is the **ExtraDataBlock** of the control. Picture properties are stored in the order in which they are referenced by the property mask. This group is the **StreamData** of the

control. Font properties are stored either in the **StreamData** or following it, as specified per control in section 2.2.

2.1.1.2.3 Other Data

Some controls have other data stored after the property values. The other data, if present, can include the TextProps structure or other control-specific data. They are specified in section 2.2 as part of the structure of each control.

2.1.1.2.4 Padding and Alignment

Property values stored in the **DataBlock** portion of a control MUST be stored on alignment boundaries equal to the size of the property value, relative to the beginning of the control in the **stream**. All 4-byte property values MUST be stored beginning at an offset into the stream, from the beginning of the version number, that is divisible by 4. All 2-byte property values MUST be stored at an offset into the stream, from the beginning of the version number, that is divisible by 2. Extra bytes MUST be added to the stream before any property value that would otherwise be stored starting at an unaligned offset. The value of each of these bytes is undefined, and the bytes MUST be ignored. Padding MUST NOT be added before a property value that is not stored.

After all property values that are less than or equal to 4 bytes in size have been persisted to the stream, extra bytes MUST be added so that the total size, in bytes, of all persisted property values and padding is divisible by 4. The value of these extra bytes at the end of the **DataBlock** MUST be set to zero, and the bytes MUST be ignored.

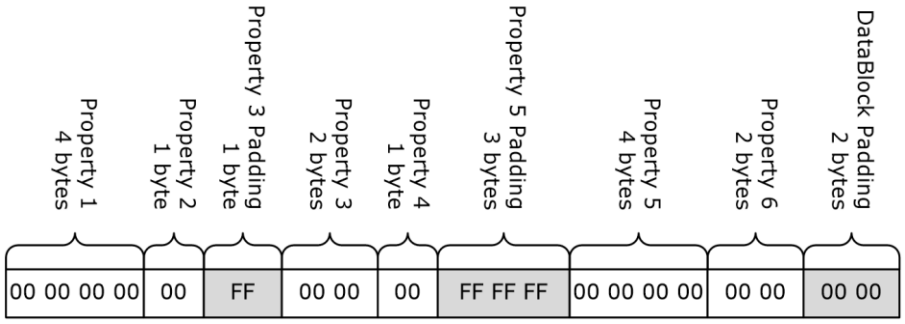


Figure 23: Padding in the DataBlock

Property values that are strings are padded to a length that is divisible by 4, as specified in section 2.4.14. Strings that are stored as part of a property of another type are not padded.

2.1.1.2.5 Arrays of Property Values

The TabStrip control stores multiple values for properties that can have a different value for each tab. These values are persisted sequentially, as an array. Arrays MUST be ordered, with the first element in each array corresponding to the first item in the control.

If all items in the control have the file format default for a property, the array for that property MUST NOT be stored. All arrays that are stored MUST have an entry for each item, including items that have the file format default.

2.1.1.3 Persistence to a Storage

If a client application requests that a non-parent control be persisted to a **storage**, a **stream** is created in the storage provided by the client. The stream name MUST be named "contents". The control is then persisted to that stream as specified in section 2.1.1.2. A CompObj stream is also created in the storage provided by the client.

2.1.2 Control Streams

This section specifies the format of embedded controls and controls that can contain embedded controls.

2.1.2.1 Parent Controls

A parent control, that is, a control that can contain embedded controls, MUST be persisted as a **storage** that contains multiple **streams**. The name of the storage and its location in the file are specified by the client application that provides the storage. The streams are specified in the following sections.

2.1.2.1.1 Form Stream

All parent controls MUST contain a FormControl. The FormControl properties are persisted to a **stream** as specified in section 2.1.1.2. The name of this stream MUST be "f". An OleSiteConcrete is persisted in this stream for each embedded control, as specified by the FormControl in section 2.2.10.12. The FormControl can also contain a DesignExtender, as specified in section 2.2.10.11.

2.1.2.2 Embedded Controls

2.1.2.2.1 Object Stream

Embedded controls that cannot themselves contain other embedded controls are persisted sequentially as FormEmbeddedActiveXControls to a **stream** contained in the same **storage** as the parent control. The name of this stream MUST be "o". The order in which they are persisted is specified by the order of **SiteData.Sites** in the FormControl of the parent, as specified in section 2.2.10.6. If a parent control contains no embedded controls or only embedded controls that are also parent controls, this stream MUST still exist and MUST be empty.

2.1.2.2.2 Embedded Parents

Embedded controls that can contain other embedded controls are each persisted to a separate **storage** within the same storage as the parent control. The name of this storage MUST be "i*n*", where *n* is the value of the ID property of the control. The value of ID is specified by the parent control. The value of *n* is the decimal representation of ID. Values of ID less than 10 MUST be preceded by a leading zero when used as part of the storage name. Values of ID greater than 10 MUST NOT be preceded by a leading zero.

2.1.2.3 MultiPage Control Structure

A **MultiPage** control that is persisted in a binary format uses the **storage** and **streams** specified in section 2.1.2.1 and section 2.1.2.2. It consists of a FormControl, which is stored in the Form stream, a TabStripControl, which is stored in the Object stream, and multiple Page controls, which are stored as specified in section 2.1.2.2.2.

The storage of a **MultiPage** control also contains an additional stream, which MUST be named "x". This stream contains an array of PageProperties immediately followed by a MultiPageProperties. The number of elements in the array of PageProperties MUST be set to 1 plus the value of **DataBlock.PageCount** of the MultiPageProperties. The first PageProperties in the array MUST be ignored. The remaining elements specify one PageProperties for each Page in the control. The order of the Pages is specified by the value of the **ExtraDataBlock.Items** of the TabStripControl specified in the previous paragraph.

2.1.2.3.1 Page Control Structure

A Page MUST be stored as part of a MultiPage control. A Page that is persisted in a binary format uses the **storage** and **streams** specified in section 2.1.2.1 and section 2.1.2.2.2. It consists of a FormControl, which is stored in the Form stream, optional embedded controls in the Object stream, and a PageProperties, which is stored in the "x" stream of its parent control, as specified in section 2.1.2.3.

2.1.2.4 CompObj Stream

The **stream** name MUST be "\001CompObj", where \001 is the character with a value 0x0001, not the string literal "\001". The contents of this stream are specified by [MS-OLEDS].

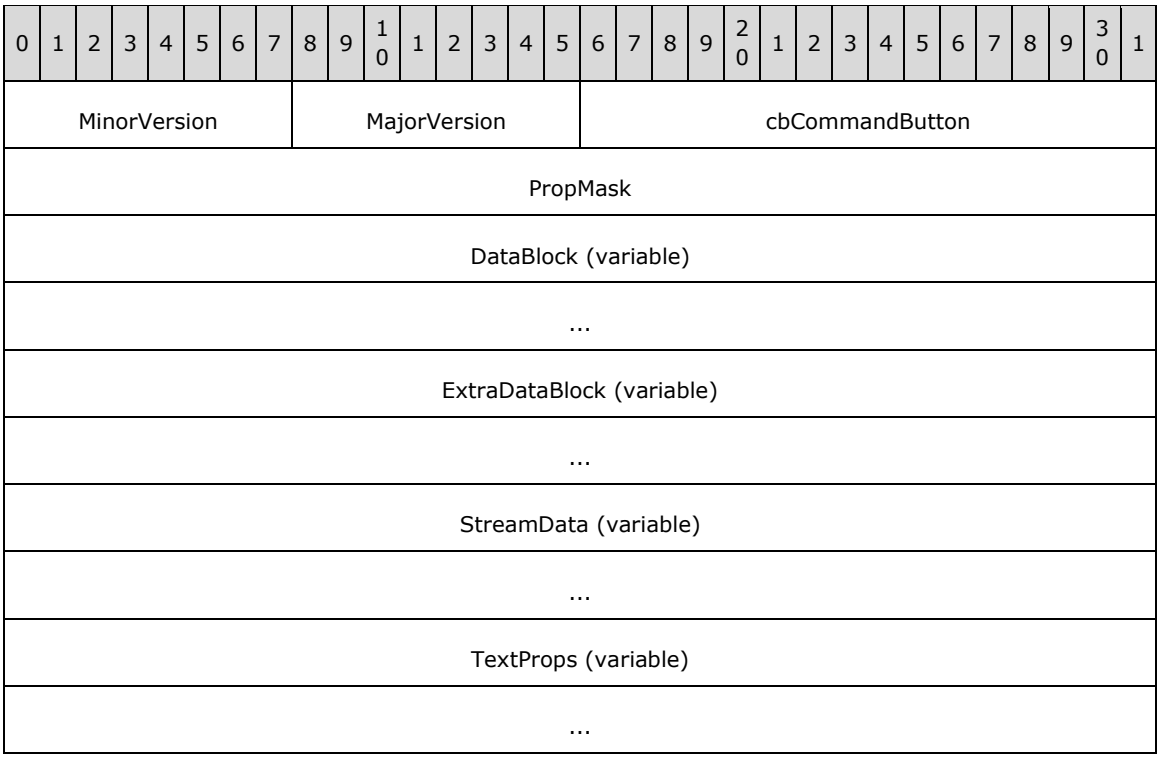
2.2 Control Structures

This section contains specifications of the structure of each control.

2.2.1 CommandButton Control Structure

2.2.1.1 CommandButtonControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbCommandButton (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): A CommandButtonPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A CommandButtonDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A CommandButtonExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A CommandButtonStreamData that specifies picture properties of the control that are not set to the file format defaults.

TextProps (variable): A TextProps that specifies text-related properties of the control.

2.2.1.2 CommandButtonPropMask

Specifies the properties of the control that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	UnusedBits																				

A - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the CommandButtonControl that contains this **CommandButtonPropMask**.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the CommandButtonControl that contains this **CommandButtonPropMask**.

C - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the CommandButtonControl that contains this **CommandButtonPropMask**.

D - fCaption (1 bit): Specifies whether the size and compression flag of the Caption property are stored in the **DataBlock.Caption** of the CommandButtonControl that contains this **CommandButtonPropMask** and the Caption string is stored in the **ExtraDataBlock.Caption** of the CommandButtonControl.

E - fPicturePosition (1 bit): Specifies whether the PicturePosition property is stored in the **DataBlock.PicturePosition** of the CommandButtonControl that contains this **CommandButtonPropMask**.

F - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the CommandButtonControl that contains this **CommandButtonPropMask**. MUST be set to 1.

G - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the CommandButtonControl that contains this **CommandButtonPropMask**.

H - fPicture (1 bit): Specifies whether the Picture property is stored in the **StreamData.Picture** of the CommandButtonControl that contains this **CommandButtonPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.Picture** of the CommandButtonControl.

I - fAccelerator (1 bit): Specifies whether the Accelerator property is stored in the **DataBlock.Accelerator** of the CommandButtonControl that contains this **CommandButtonPropMask**.

J - fTakeFocusOnClick (1 bit): Specifies whether the value of the TakeFocusOnClick property is not the file format default.

K - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the CommandButtonControl that contains this **CommandButtonPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the CommandButtonControl.

UnusedBits (21 bits): MUST be set to zero.

2.2.1.3 CommandButtonDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the CommandButtonControl that contains this **CommandButtonDataBlock** is set to zero, the property value MUST NOT be stored in the file.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="32">ForeColor (optional)</td></tr>
<tr><td colspan="32">BackColor (optional)</td></tr>
<tr><td colspan="32">VariousPropertyBits (optional)</td></tr>
<tr><td colspan="32">Caption (optional)</td></tr>
<tr><td colspan="32">PicturePosition (optional)</td></tr>
<tr><td colspan="8">MousePointer (optional)</td><td colspan="24">Padding1 (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">Picture (optional)</td><td colspan="16">Padding2 (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">Accelerator (optional)</td><td colspan="16">Padding3 (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">MouseIcon (optional)</td><td colspan="16">Padding4 (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

Caption (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Caption property.

PicturePosition (4 bytes): An fmPicturePosition that specifies the value of the PicturePosition property.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Picture (2 bytes): MUST be set to 0xFFFF when the **PropMask.fPicture** of the CommandButtonControl that contains this **CommandButtonDataBlock** is set to 1. Not present when **PropMask.fPicture** is set to zero.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes needed to align the following property, as specified by PaddingAndAlignment.

Accelerator (2 bytes): A **Unicode** character that specifies the value of the Accelerator property.

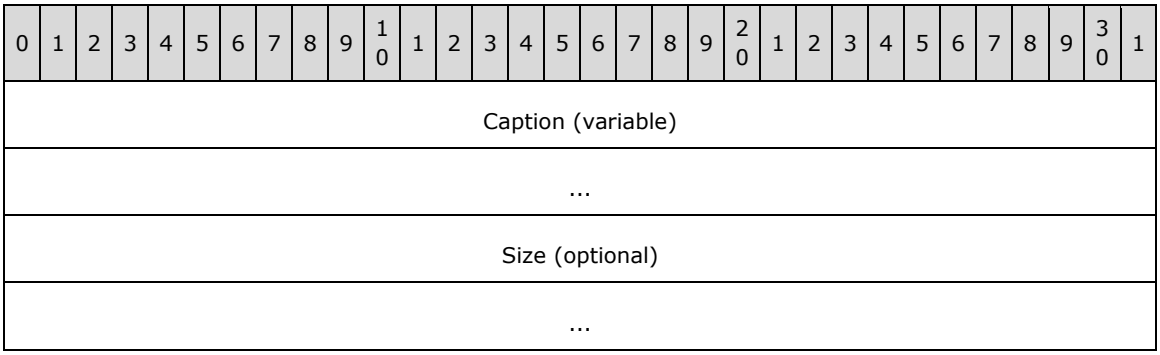
Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when **PropMask.fMouseIcon** of the CommandButtonControl that contains this **CommandButtonDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Padding4 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **CommandButtonDataBlock** divisible by 4.

2.2.1.4 CommandButtonExtraDataBlock

Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the CommandButtonControl that contains this **CommandButtonExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.

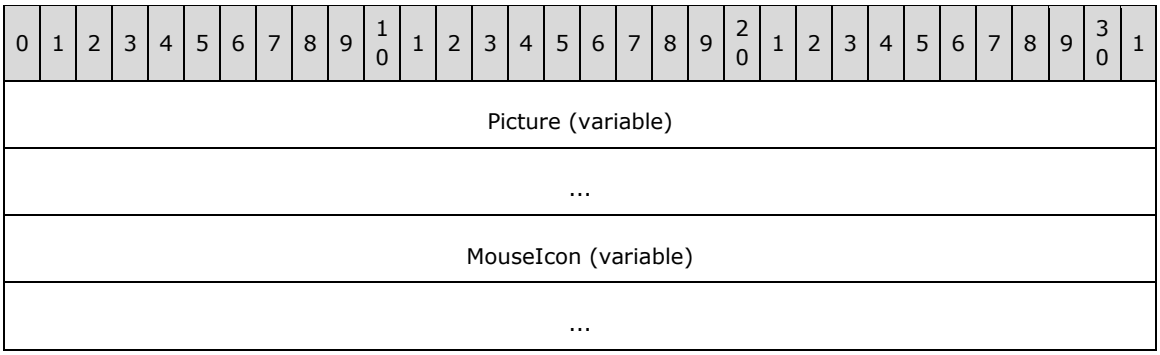


Caption (variable): An fmString that specifies the Caption property. The size and compression of the string is specified by the **DataBlock.Caption** of the CommandButtonControl that contains this **CommandButtonExtraDataBlock**.

Size (8 bytes): An fmSize that specifies the Size property.

2.2.1.5 CommandButtonStreamData

Specifies picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the CommandButtonControl that contains this **CommandButtonStreamData** is set to zero, the property value MUST NOT be stored in the file.



Picture (variable): A GuidAndPicture that specifies the Picture property.

MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

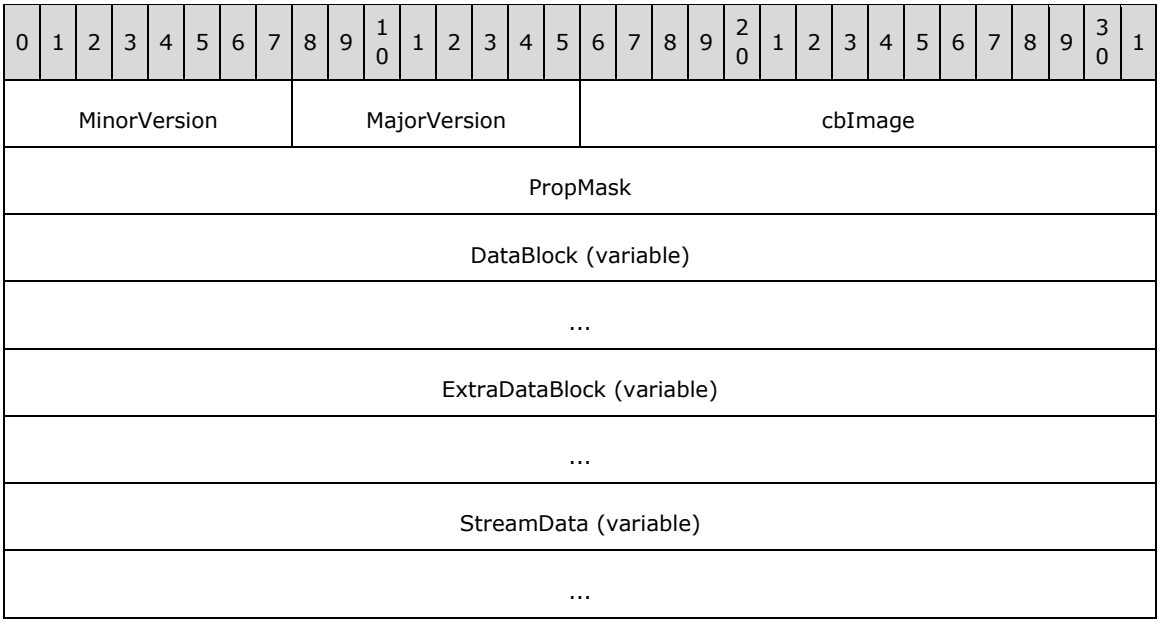
2.2.2 Frame Control

A Frame control is a parent control that is persisted in binary format as specified in section 2.1.2.1.1. In other words, it consists of a FormControl stored in a Form stream, with any child controls stored in an Object stream, as specified in section 2.1.2.2. If the Frame control is the child of another control, it is persisted to a storage as specified in section 2.1.2.2.2, with its child objects persisted to the Object stream within the parent storage.

2.2.3 Image Control Structure

2.2.3.1 ImageControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbImage (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): An ImagePropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): An ImageDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): An ImageExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): An ImageStreamData that specifies picture properties of the control that are not set to the file format defaults.

2.2.3.2 ImagePropMask

Specifies the properties of the control that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A		B	C	D	E	F	G	H	I	J	K	L	M	N	UnusedBits2																

A - UnusedBits1 (2 bits): MUST be set to zero.

B - fAutoSize (1 bit): Specifies whether the value of the AutoSize property is *not* the file format default.

C - fBorderColor (1 bit): Specifies whether the BorderColor property is stored in the **DataBlock.BorderColor** of the ImageControl that contains this **ImagePropMask**.

D - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the ImageControl that contains this **ImagePropMask**.

E - fBorderStyle (1 bit): Specifies whether the BorderStyle property is stored in the **DataBlock.BorderStyle** of the ImageControl that contains this **ImagePropMask**.

F - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the ImageControl that contains this **ImagePropMask**.

G - fPictureSizeMode (1 bit): Specifies whether the PictureSizeMode property is stored in the **DataBlock.PictureSizeMode** of the ImageControl that contains this **ImagePropMask**.

H - fSpecialEffect (1 bit): Specifies whether the SpecialEffect property is stored in the **DataBlock.PictureSizeMode** of the ImageControl that contains this **ImagePropMask**.

I - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the ImageControl that contains this **ImagePropMask**. MUST be set to 1.

J - fPicture (1 bit): Specifies whether the Picture property is stored in the **StreamData.Picture** of the ImageControl that contains this **ImagePropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.Picture** of the ImageControl.

K - fPictureAlignment (1 bit): Specifies whether the PictureAlignment property is stored in the **DataBlock.PictureAlignment** of the ImageControl that contains this **ImagePropMask**.

L - fPictureTiling (1 bit): Specifies whether the value of the PictureTiling property is the file format default.

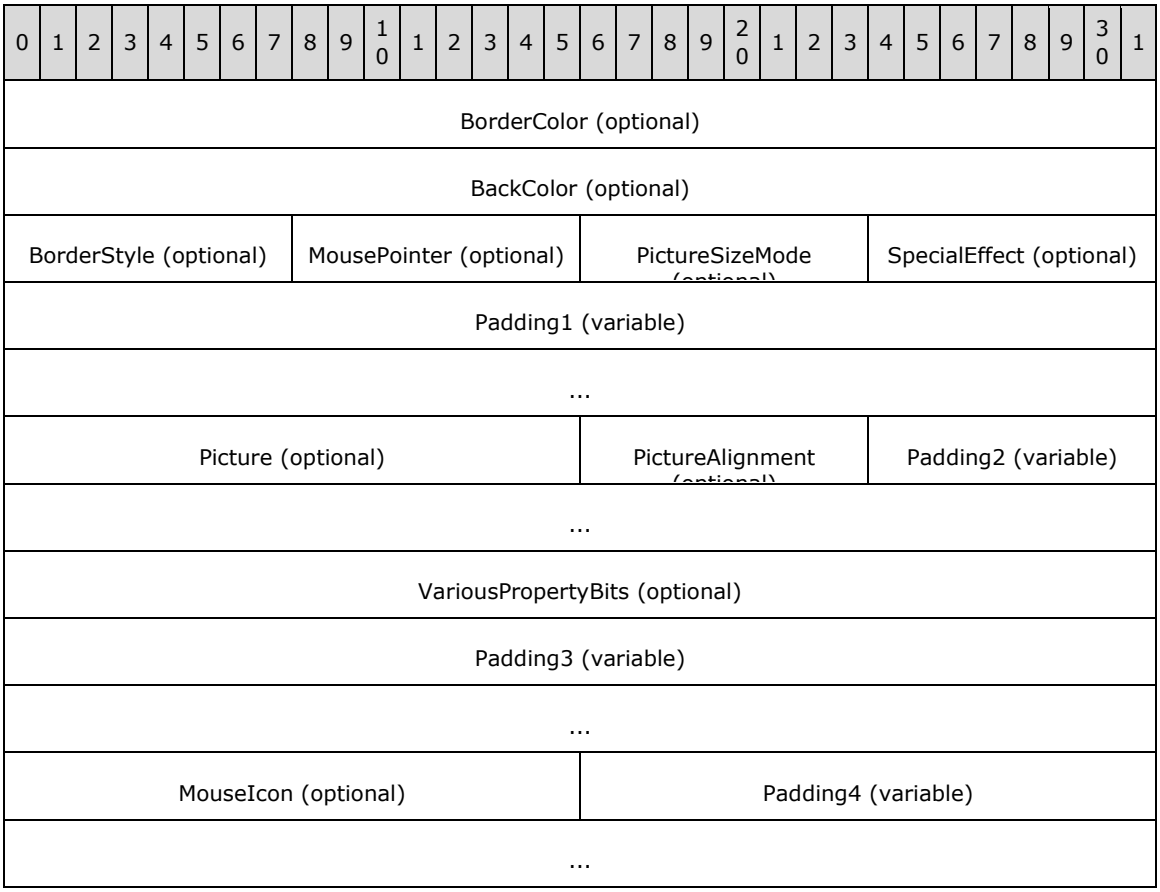
M - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the ImageControl that contains this **ImagePropMask**.

N - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the ImageControl that contains this **ImagePropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the ImageControl.

UnusedBits2 (17 bits): MUST be set to zero.

2.2.3.3 ImageDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the ImageControl that contains this **ImageDataBlock** is set to zero, the property value MUST NOT be stored in the file.



BorderColor (4 bytes): An OLE_COLOR that specifies the value of the BorderColor property.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

BorderStyle (1 byte): An fmBorderStyle that specifies the value of the BorderStyle property.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

PictureSizeMode (1 byte): An fmPictureSizeMode that specifies the value of the PictureSizeMode property.

SpecialEffect (1 byte): An fmSpecialEffect that specifies the value of the SpecialEffect property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Picture (2 bytes): MUST be set to 0xFFFF when **PropMask.fPicture** of the ImageControl that contains this **ImageDataBlock** is set to 1. Not present when **PropMask.fPicture** is set to zero.

PictureAlignment (1 byte): An fmPictureAlignment that specifies the value of the PictureAlignment property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

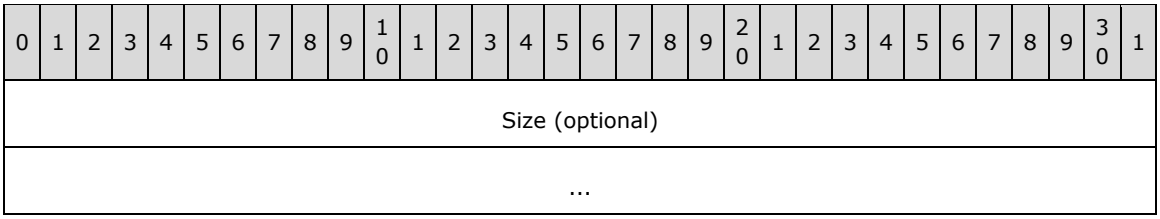
Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the ImageControl that contains this **ImageDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Padding4 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **ImageDataBlock** divisible by 4.

2.2.3.4 ImageExtraDataBlock

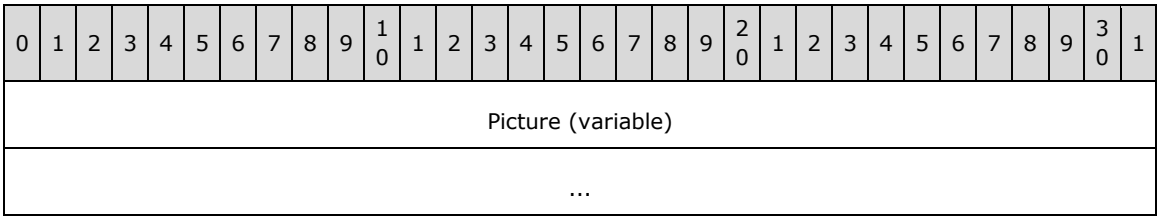
Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the ImageControl that contains this **ImageExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.



Size (8 bytes): An fmSize that specifies the Size property.

2.2.3.5 ImageStreamData

Specifies picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the ImageControl that contains this **ImageStreamData** is set to zero, the property value MUST NOT be stored in the file.



MouseIcon (variable)
...

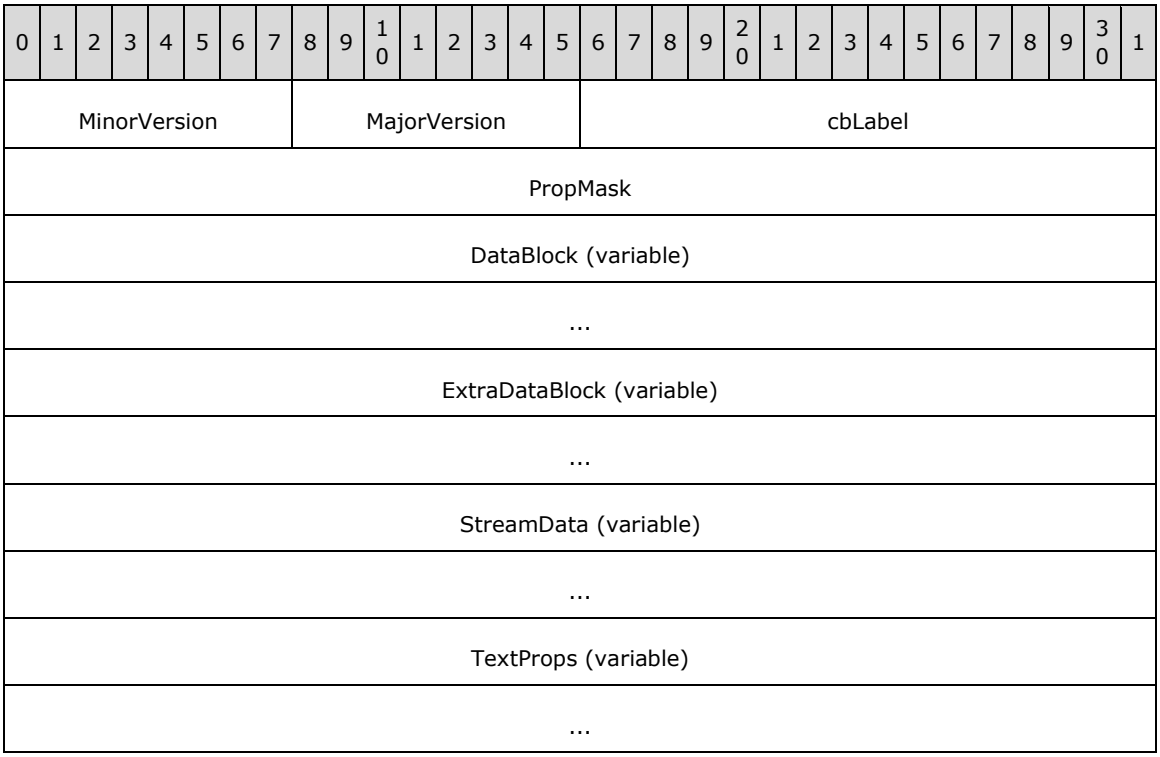
Picture (variable): A GuidAndPicture that specifies the Picture property.

MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

2.2.4 Label Control Structure

2.2.4.1 LabelControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbLabel (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): A LabelPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A LabelDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A LabelExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A LabelStreamData that specifies picture properties of the control that are not set to the file format defaults.

TextProps (variable): A TextProps that specifies text-related properties of the control.

2.2.4.2 LabelPropMask

Specifies the properties of the control that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	UnusedBits																		

A - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the LabelControl that contains this **LabelPropMask**.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the LabelControl that contains this **LabelPropMask**.

C - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the LabelControl that contains this **LabelPropMask**.

D - fCaption (1 bit): Specifies whether the size and compression flag of the Caption property are stored in the **DataBlock.Caption** of the LabelControl that contains this **LabelPropMask** and the Caption string is stored in the **ExtraDataBlock.Caption** of the LabelControl.

E - fPicturePosition (1 bit): Specifies whether the PicturePosition property is stored in the **DataBlock.PicturePosition** of the LabelControl that contains this **LabelPropMask**.

F - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the LabelControl that contains this **LabelPropMask**. MUST be set to 1.

G - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the LabelControl that contains this **LabelPropMask**.

H - fBorderColor (1 bit): Specifies whether the BorderColor property is stored in the **DataBlock.BorderColor** of the LabelControl that contains this **LabelPropMask**.

I - fBorderStyle (1 bit): Specifies whether the BorderStyle property is stored in the **DataBlock.BorderStyle** of the LabelControl that contains this **LabelPropMask**.

J - fSpecialEffect (1 bit): Specifies whether the SpecialEffect property is stored in the **DataBlock.SpecialEffect** of the LabelControl that contains this **LabelPropMask**.

K - fPicture (1 bit): Specifies whether the Picture property is stored in the **StreamData.Picture** of the LabelControl that contains this **LabelPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.Picture** of the LabelControl.

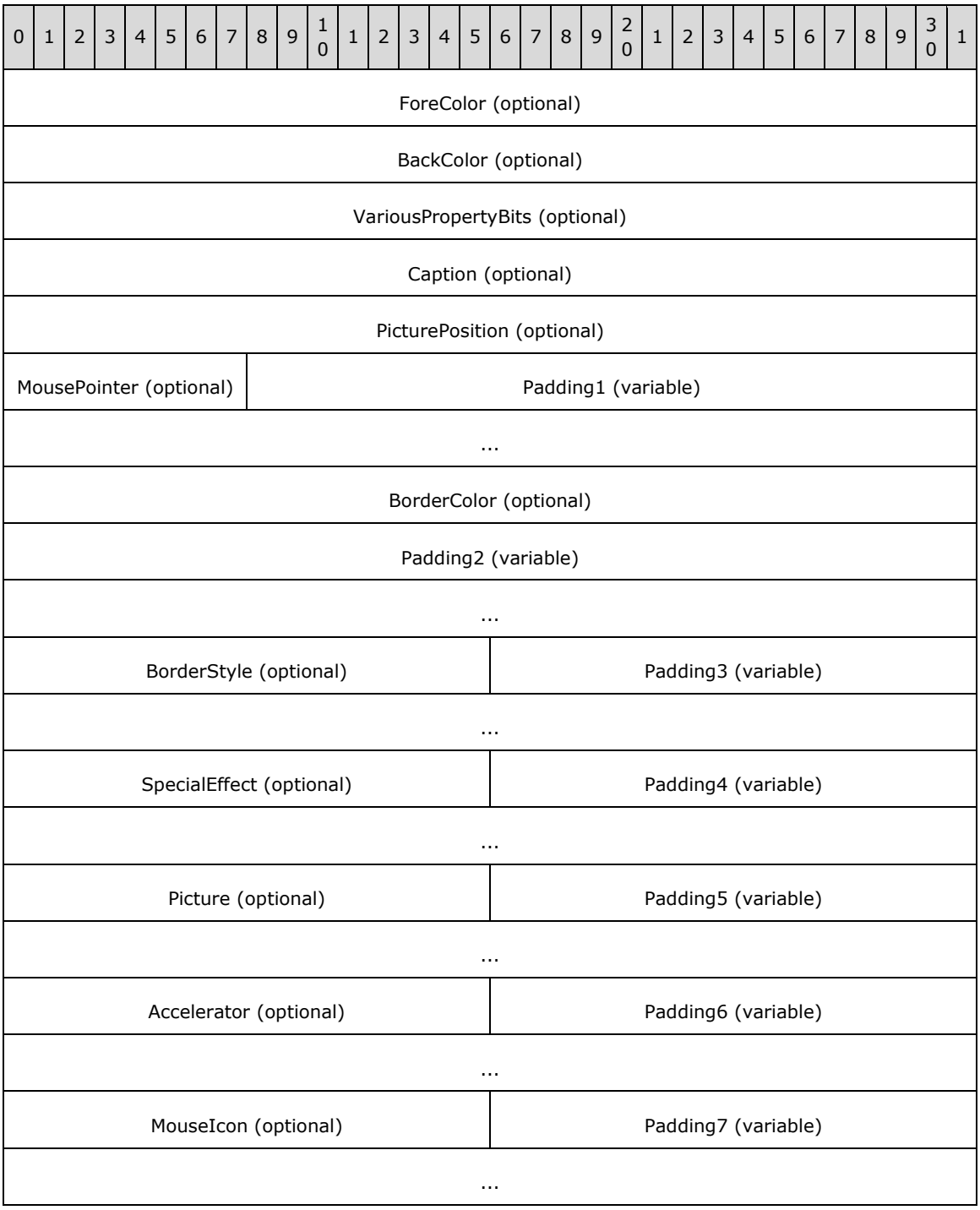
L - fAccelerator (1 bit): Specifies whether the Accelerator property is stored in the **DataBlock.Accelerator** of the LabelControl that contains this **LabelPropMask**.

M - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the LabelControl that contains this **LabelPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the LabelControl.

UnusedBits (19 bits): MUST be set to zero.

2.2.4.3 LabelDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the LabelControl that contains this LabelDataBlock is set to zero, the property value MUST NOT be stored in the file.



ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

Caption (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Caption property.

PicturePosition (4 bytes): An fmPicturePosition that specifies the value of the PicturePosition property.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

BorderColor (4 bytes): An OLE_COLOR that specifies the value of the BorderColor property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

BorderStyle (2 bytes): An fmBorderStyle that specifies the value of the BorderStyle property.

Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

SpecialEffect (2 bytes): An fmSpecialEffect that specifies the value of the SpecialEffect property.

Padding4 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Picture (2 bytes): MUST be set to 0xFFFF when the **PropMask.fPicture** of the LabelControl that contains this **LabelDataBlock** is set to 1. Not present when **PropMask.fPicture** is set to zero.

Padding5 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Accelerator (2 bytes): A **Unicode** character that specifies the value of the Accelerator property.

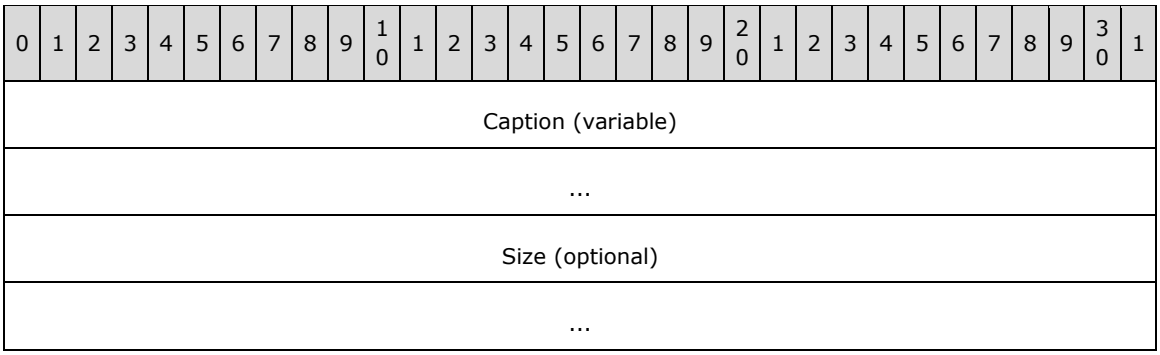
Padding6 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the LabelControl that contains this **LabelDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Padding7 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **LabelDataBlock** divisible by 4.

2.2.4.4 LabelExtraDataBlock

Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the LabelControl that contains this **LabelExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.

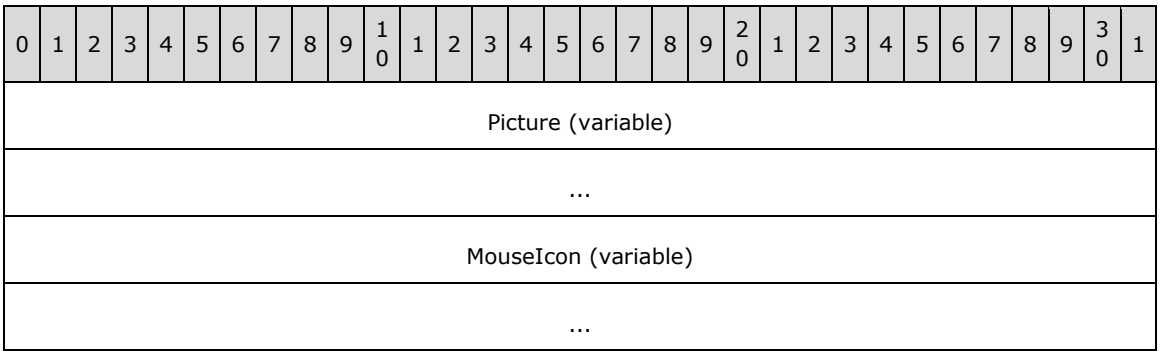


Caption (variable): An fmString that specifies the Caption property. The size and compression of the string are specified by the **DataBlock.Caption** of the LabelControl that contains this **LabelExtraDataBlock**.

Size (8 bytes): An fmSize that specifies the Size property.

2.2.4.5 LabelStreamData

Specifies picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the LabelControl that contains this **LabelStreamData** is set to zero, the property value MUST NOT be stored in the file.



Picture (variable): A GuidAndPicture that specifies the Picture property.

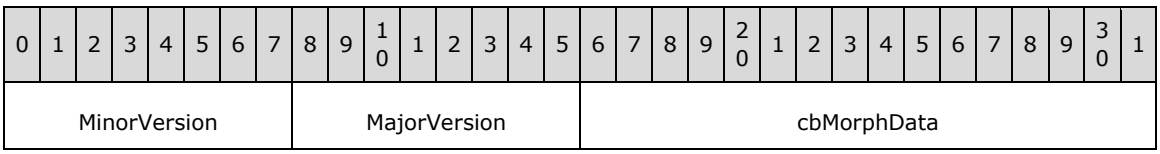
MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

2.2.5 MorphData Control Structure

The **MorphDataControl** structure is an aggregate of six controls: CheckBox, ComboBox, ListBox, OptionButton, TextBox, and ToggleButton. The type of the control is specified by the DisplayStyle property. This section specifies the persistence format for all six controls.

2.2.5.1 MorphDataControl

Specifies the structure of the control as persisted to a **stream**.



PropMask
...
DataBlock (variable)
...
ExtraDataBlock (variable)
...
StreamData (variable)
...
TextProps (variable)
...
rgColumnInfo (variable)
...

MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbMorphData (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (8 bytes): A MorphDataPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A MorphDataDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A MorphDataExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A MorphDataStreamData that specifies picture properties of the control that are not set to the file format defaults.

TextProps (variable): A TextProps that specifies text-related properties of the control.

rgColumnInfo (variable): Optional. An array of MorphDataColumnInfo. Specifies the width of columns in ComboBox and ListBox controls. MUST NOT exist for other types of controls. The number of elements in this array MUST be equal to the value of the cColumnInfo property.

2.2.5.2 MorphDataPropMask

Specifies the properties of the control that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

All properties that do not apply to the specific type of control specified by the DisplayStyle property MUST have the corresponding bit set to zero in this structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f
g	UnusedBits3																														

A - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the MorphDataControl that contains this **MorphDataPropMask**.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the MorphDataControl that contains this **MorphDataPropMask**.

C - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the MorphDataControl that contains this **MorphDataPropMask**.

D - fMaxLength (1 bit): Specifies whether the MaxLength property is stored in the **DataBlock.MaxLength** of the MorphDataControl that contains this **MorphDataPropMask**.

E - fBorderStyle (1 bit): Specifies whether the BorderStyle property is stored in the **DataBlock.BorderStyle** of the MorphDataControl that contains this **MorphDataPropMask**.

F - fScrollBars (1 bit): Specifies whether the ScrollBars property is stored in the **DataBlock.ScrollBars** of the MorphDataControl that contains this **MorphDataPropMask**.

G - fDisplayStyle (1 bit): Specifies whether the DisplayStyle property is stored in the **DataBlock.DisplayStyle** of the MorphDataControl that contains this **MorphDataPropMask**.

H - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the MorphDataControl that contains this **MorphDataPropMask**.

I - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the MorphDataControl that contains this **MorphDataPropMask**. MUST be set to 1.

J - fPasswordChar (1 bit): Specifies whether the PasswordChar property is stored in the **DataBlock.PasswordChar** of the MorphDataControl that contains this **MorphDataPropMask**.

K - fListWidth (1 bit): Specifies whether the ListWidth property is stored in the **DataBlock.ListWidth** of the MorphDataControl that contains this **MorphDataPropMask**.

L - fBoundColumn (1 bit): Specifies whether the BoundColumn property is stored in the **DataBlock.BoundColumn** of the MorphDataControl that contains this **MorphDataPropMask**.

M - fTextColumn (1 bit): Specifies whether the TextColumn property is stored in the **DataBlock.TextColumn** of the MorphDataControl that contains this **MorphDataPropMask**.

N - fColumnCount (1 bit): Specifies whether the ColumnCount property is stored in the **DataBlock.ColumnCount** of the MorphDataControl that contains this **MorphDataPropMask**.

O - fListRows (1 bit): Specifies whether the ListRows property is stored in the **DataBlock.ListRows** of the MorphDataControl that contains this **MorphDataPropMask**.

P - fcColumnInfo (1 bit): Specifies whether the cColumnInfo property is stored in the **DataBlock.cColumnInfo** of the MorphDataControl that contains this **MorphDataPropMask**.

Q - fMatchEntry (1 bit): Specifies whether the MatchEntry property is stored in the **DataBlock.MatchEntry** of the MorphDataControl that contains this **MorphDataPropMask**.

R - fListStyle (1 bit): Specifies whether the ListStyle property is stored in the **DataBlock.ListStyle** of the MorphDataControl that contains this **MorphDataPropMask**.

S - fShowDropButtonWhen (1 bit): Specifies whether the ShowDropButtonWhen property is stored in the **DataBlock.ShowDropButtonWhen** of the MorphDataControl that contains this **MorphDataPropMask**.

T - UnusedBits1 (1 bit): MUST be set to zero.

U - fDropButtonStyle (1 bit): Specifies whether the DropButtonStyle property is stored in the **DataBlock.DropButtonStyle** of the MorphDataControl that contains this **MorphDataPropMask**.

V - fMultiSelect (1 bit): Specifies whether the MultiSelect property is stored in the **DataBlock.MultiSelect** of the MorphDataControl that contains this **MorphDataPropMask**.

W - fValue (1 bit): Specifies whether the size and compression flag of the Value property are stored in the **DataBlock.Value** of the MorphDataControl that contains this **MorphDataPropMask** and the Value string is stored in the **ExtraDataBlock.Value** of the MorphDataControl.

X - fCaption (1 bit): Specifies whether the size and compression flag of the Caption property are stored in the **DataBlock.Caption** of the MorphDataControl that contains this **MorphDataPropMask** and the Caption string is stored in the **ExtraDataBlock.Caption** of the MorphDataControl.

Y - fPicturePosition (1 bit): Specifies whether the PicturePosition property is stored in the **DataBlock.PicturePosition** of the MorphDataControl that contains this **MorphDataPropMask**.

Z - fBorderColor (1 bit): Specifies whether the BorderColor property is stored in the **DataBlock.BorderColor** of the MorphDataControl that contains this **MorphDataPropMask**.

a - fSpecialEffect (1 bit): Specifies whether the SpecialEffect property is stored in the **DataBlock.SpecialEffect** of the MorphDataControl that contains this **MorphDataPropMask**.

b - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the MorphDataControl that contains this **MorphDataPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the MorphDataControl.

c - fPicture (1 bit): Specifies whether the Picture property is stored in the **StreamData.Picture** of the MorphDataControl that contains this **MorphDataPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.Picture** of the MorphDataControl.

d - fAccelerator (1 bit): Specifies whether the Accelerator property is stored in the **DataBlock.Accelerator** of the MorphDataControl that contains this **MorphDataPropMask**.

e - UnusedBits2 (1 bit): MUST be set to zero.

f - Reserved (1 bit): MUST be set to 1 and MUST be ignored.

g - fGroupName (1 bit): Specifies whether the size and compression flag of the GroupName property are stored in the **DataBlock.GroupName** of the MorphDataControl that contains this **MorphDataPropMask** and the GroupName string is stored in the **ExtraDataBlock.GroupName** of the MorphDataControl.

UnusedBits3 (31 bits): MUST be set to zero.

2.2.5.3 MorphDataDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the MorphDataControl that contains this **MorphDataDataBlock** is set to zero, the property value MUST NOT be stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
VariousPropertyBits (optional)																															
BackColor (optional)																															
ForeColor (optional)																															
MaxLength (optional)																															
BorderStyle (optional)											ScrollBars (optional)											DisplayStyle (optional)									
MousePointer (optional)																															
Padding1 (variable)																															
...																															
PasswordChar (optional)																					Padding2 (variable)										
...																															
ListWidth (optional)																															
Padding3 (variable)																															
...																															
BoundColumn (optional)																					Padding4 (variable)										
...																															
TextColumn (optional)																					Padding5 (variable)										
...																															
ColumnCount (optional)																					Padding6 (variable)										
...																															
ListRows (optional)																					Padding7 (variable)										
...																															
cColumnInfo (optional)																					MatchEntry (optional)										
ListStyle (optional)																															

ShowDropButtonWhen (optional)	DropButtonStyle (optional)	MultiSelect (optional)	Padding8 (variable)
...			
Value (optional)			
Padding9 (variable)			
...			
Caption (optional)			
Padding10 (variable)			
...			
PicturePosition (optional)			
Padding11 (variable)			
...			
BorderColor (optional)			
Padding12 (variable)			
...			
SpecialEffect (optional)			
Padding13 (variable)			
...			
MouseIcon (optional)		Padding14 (variable)	
...			
Picture (optional)		Padding15 (variable)	
...			
Accelerator (optional)		Padding16 (variable)	
...			
GroupName (optional)			
Padding17 (variable)			

...

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

MaxLength (4 bytes): An unsigned integer that specifies the value of the MaxLength property.

BorderStyle (1 byte): An fmBorderStyle that specifies the value of the BorderStyle property.

ScrollBars (1 byte): An fmScrollBars that specifies the value of the ScrollBars property.

DisplayStyle (1 byte): An fmDisplayStyle that specifies the value of the DisplayStyle property.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

PasswordChar (2 bytes): A **Unicode** character that specifies the value of the PasswordChar property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

ListWidth (4 bytes): An unsigned integer that specifies the value of the ListWidth property.

Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

BoundColumn (2 bytes): An unsigned integer that specifies the value of the BoundColumn property.

Padding4 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TextColumn (2 bytes): A signed integer that specifies the value of the TextColumn property.

Padding5 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

ColumnCount (2 bytes): A signed integer that specifies the value of the ColumnCount property.

Padding6 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes needed to align the following property, as specified by PaddingAndAlignment.

ListRows (2 bytes): An unsigned integer that specifies the value of the ListRows property.

Padding7 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes needed to align the following property, as specified by PaddingAndAlignment.

cColumnInfo (2 bytes): An unsigned integer that specifies the value of the cColumnInfo property.

MatchEntry (1 byte): An fmMatchEntry that specifies the value of the MatchEntry property.

ListStyle (1 byte): An fmListStyle that specifies the value of the ListStyle property.

ShowDropButtonWhen (1 byte): An fmShowDropButtonWhen that specifies the value of the ShowDropButtonWhen property.

DropButtonStyle (1 byte): An fmDropButtonStyle that specifies the value of the DropButtonStyle property.

MultiSelect (1 byte): An fmMultiSelect that specifies the value of the MultiSelect property.

Padding8 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Value (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Value property.

Padding9 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Caption (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Caption property.

Padding10 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

PicturePosition (4 bytes): An fmPicturePosition that specifies the value of the PicturePosition property.

Padding11 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

BorderColor (4 bytes): An OLE_COLOR that specifies the value of the BorderColor property.

Padding12 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

SpecialEffect (4 bytes): An fmSpecialEffect that specifies the value of the SpecialEffect property.

Padding13 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the MorphDataControl that contains this **MorphDataDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Padding14 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Picture (2 bytes): MUST be set to 0xFFFF when the **PropMask.fPicture** of the MorphDataControl that contains this **MorphDataDataBlock** is set to 1. Not present when **PropMask.fPicture** is set to zero.

Padding15 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Accelerator (2 bytes): A Unicode character that specifies the value of the Accelerator property.

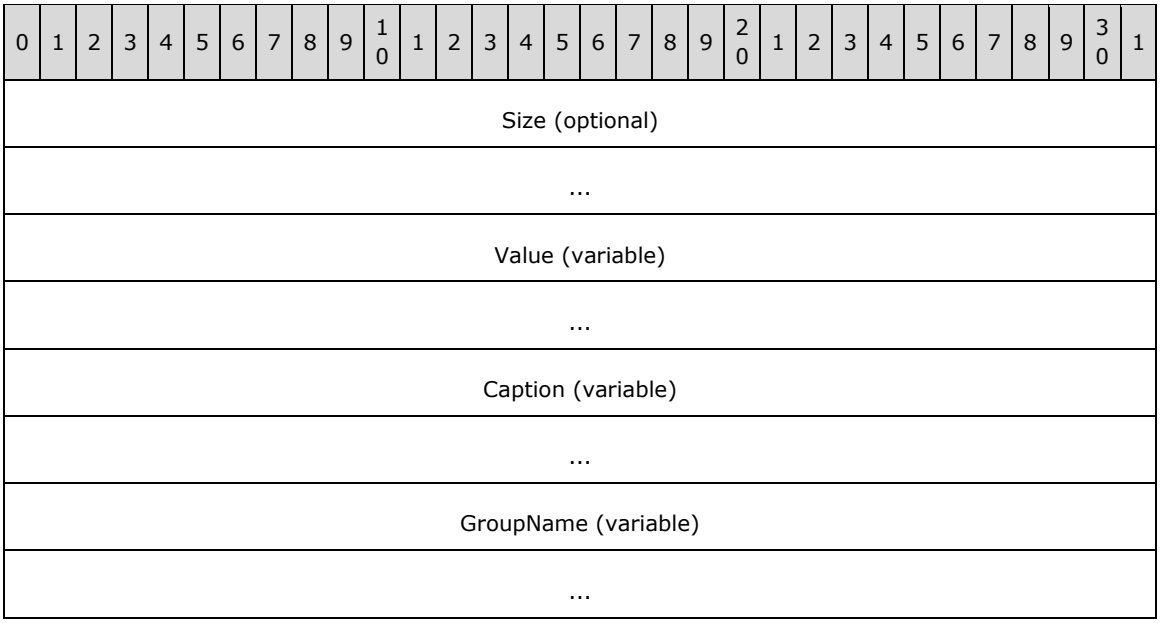
Padding16 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

GroupName (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the GroupName property.

Padding17 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **MorphDataDataBlock** divisible by 4.

2.2.5.4 MorphDataExtraDataBlock

Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the MorphDataControl that contains this **MorphDataExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.



Size (8 bytes): An fmSize that specifies the Size property.

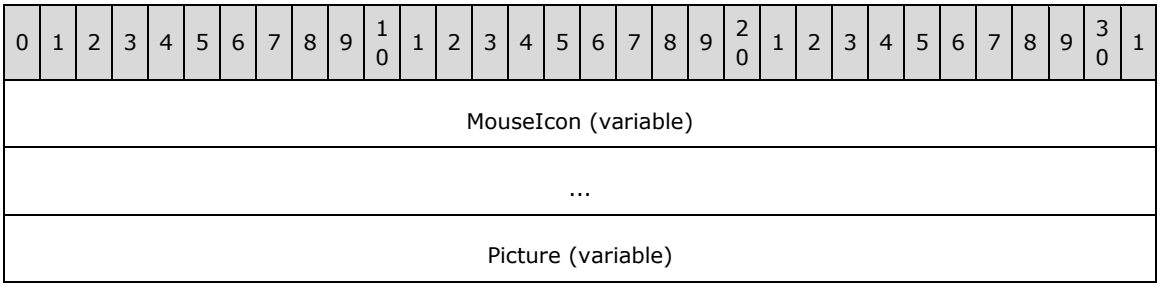
Value (variable): An fmString that specifies the Value property. The size and compression of the string is specified by the **DataBlock.Value** of the MorphDataControl that contains this **MorphDataExtraDataBlock**.

Caption (variable): An fmString that specifies the Caption property. The size and compression of the string is specified by the **DataBlock.Caption** of the MorphDataControl that contains this **MorphDataExtraDataBlock**.

GroupName (variable): An fmString that specifies the GroupName property. The size and compression of the string is specified by the **DataBlock.GroupName** of the MorphDataControl that contains this **MorphDataExtraDataBlock**.

2.2.5.5 MorphDataStreamData

Specifies picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the MorphDataControl that contains this **MorphDataStreamData** is set to zero, the property value MUST NOT be stored in the file.



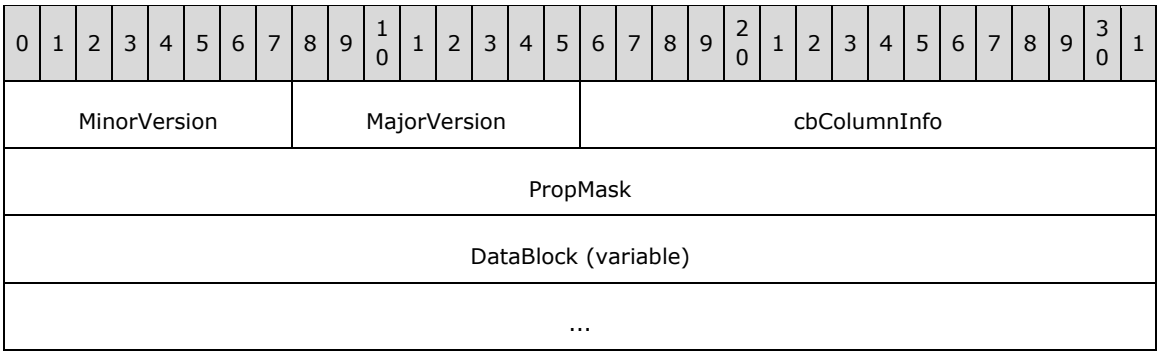
...

MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

Picture (variable): A GuidAndPicture that specifies the Picture property.

2.2.5.6 MorphDataColumnInfo

Specifies the width of a column in a ComboBox or ListBox control.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

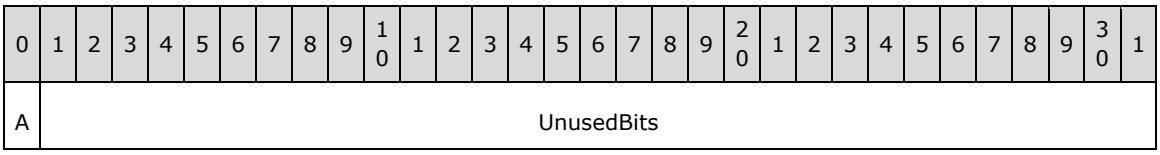
cbColumnInfo (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask** and **DataBlock**.

PropMask (4 bytes): A MorphDataColumnInfoPropMask that specifies whether the Width property of the column is not set to the file format default.

DataBlock (variable): A MorphDataColumnInfoDataBlock that specifies the value of the Width property of the column when it is not set to the file format default.

2.2.5.7 MorphDataColumnInfoPropMask

Specifies whether the width of this column is not set to the file format default. A value of zero in **fColumnWidth** specifies that the Width property is the file format default and is not stored in the file.

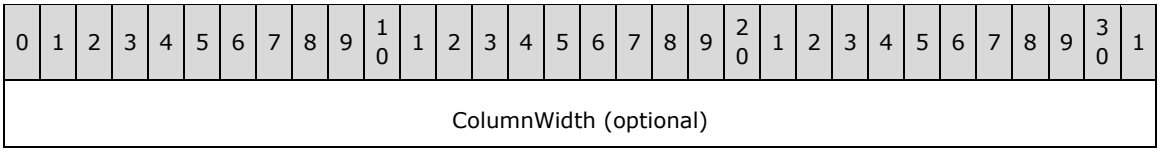


A - fColumnWidth (1 bit): Specifies whether the Width property is stored in the **DataBlock.ColumnWidth** of the MorphDataColumnInfo that contains this **MorphDataColumnInfoPropMask**.

UnusedBits (31 bits): MUST be set to zero.

2.2.5.8 MorphDataColumnInfoDataBlock

Specifies the Width property of this column if it is not set to the file format default. If the value of **PropMask.fColumnWidth** of the MorphDataColumnInfo that contains this **MorphDataColumnInfoDataBlock** is set to zero, the property value MUST NOT be stored in the file.



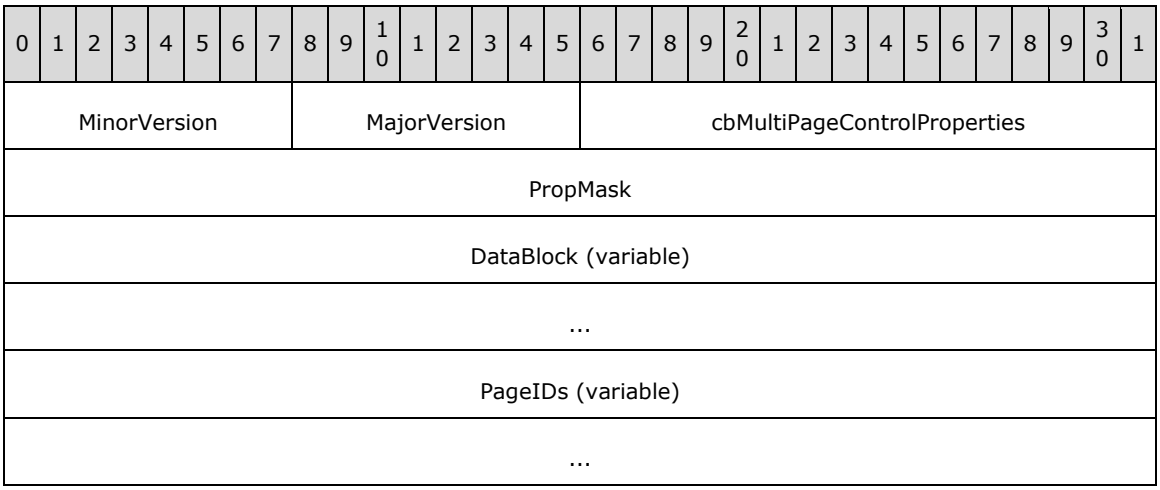
ColumnWidth (4 bytes): A signed integer that specifies the value of the Width property.

2.2.6 MultiPage Properties

MultiPage controls are parent controls. They are persisted in binary format as specified in section 2.1.2. This section specifies the format of the MultiPage control as persisted in the "x" stream.

2.2.6.1 MultiPageProperties

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbMultiPageControlProperties (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask** and **DataBlock.**

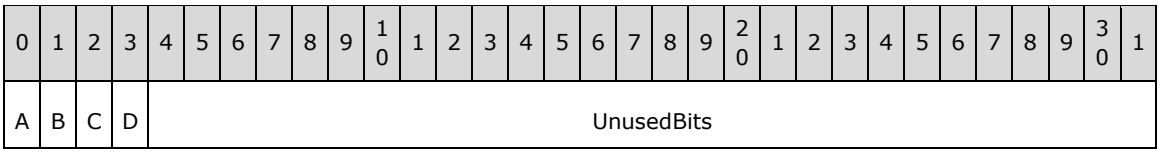
PropMask (4 bytes): A MultiPagePropertiesPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A MultiPagePropertiesDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format default.

PageIDs (variable): An array of ID. Specifies the value of the ID property for each Page of the MultiPage control, where the first entry in the array specifies the ID of the first Page, and so on.

2.2.6.2 MultiPagePropertiesPropMask

Specifies the properties of the control that are not set to the file format default. For each field, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.



A - Unused1 (1 bit): MUST be set to zero.

B - fPageCount (1 bit): Specifies whether the PageCount property is stored in the **DataBlock.PageCount** of the MultiPageProperties that contains this **MultiPagePropertiesPropMask**.

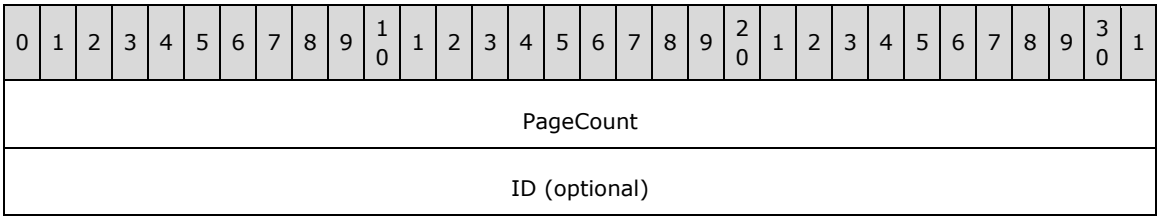
C - fID (1 bit): Specifies whether the ID property is stored in the **DataBlock.ID** of the MultiPageProperties that contains this **MultiPagePropertiesPropMask**.

D - fFlags (1 bit): Specifies whether the value of the Flags property is *not* the file format default.

UnusedBits (28 bits): MUST be set to zero.

2.2.6.3 MultiPagePropertiesDataBlock

Specifies the properties of the control that are not set to the file format defaults. If the corresponding field in the **PropMask** of the MultiPageProperties that contains this **MultiPagePropertiesDataBlock** is set to zero, the property value MUST NOT be stored in the file.



PageCount (4 bytes): A signed integer that specifies the value of the PageCount property.

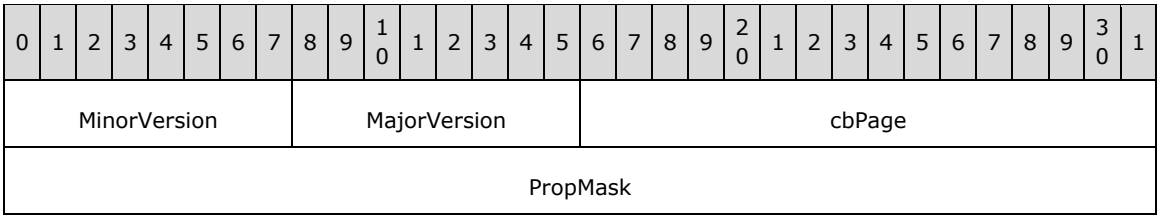
ID (4 bytes): A signed integer that specifies the value of the ID property.

2.2.6.4 Page Properties

Page controls are parent controls. They are persisted in binary format as specified in section 2.1.2. This section specifies the format of the Page control.

2.2.6.4.1 PageProperties

Specifies the structure of the control as persisted to a **stream**.



DataBlock (variable)
...

MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbPage (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask** and **DataBlock**.

PropMask (4 bytes): A PagePropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A PageDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

2.2.6.4.2 PagePropMask

Specifies the properties of the control that are not set to the file format default. For each field, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	UnusedBits																												

A - Unused1 (1 bit): MUST be set to zero.

B - fTransitionEffect (1 bit): Specifies whether the TransitionEffect property is stored in the **DataBlock.TransitionEffect** of the PageProperties that contains this **PagePropMask**.

C - fTransitionPeriod (1 bit): Specifies whether the TransitionPeriod property is stored in the **DataBlock.TransitionPeriod** of the PageProperties that contains this **PagePropMask**.

UnusedBits (29 bits): MUST be set to zero.

2.2.6.4.3 PageDataBlock

Specifies the properties of the Page that are not set to the file format defaults. If the corresponding field in the **PropMask** of the PageProperties that contains this **PageDataBlock** is set to zero, the property value MUST NOT be stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
TransitionEffect (optional)																															
TransitionPeriod (optional)																															

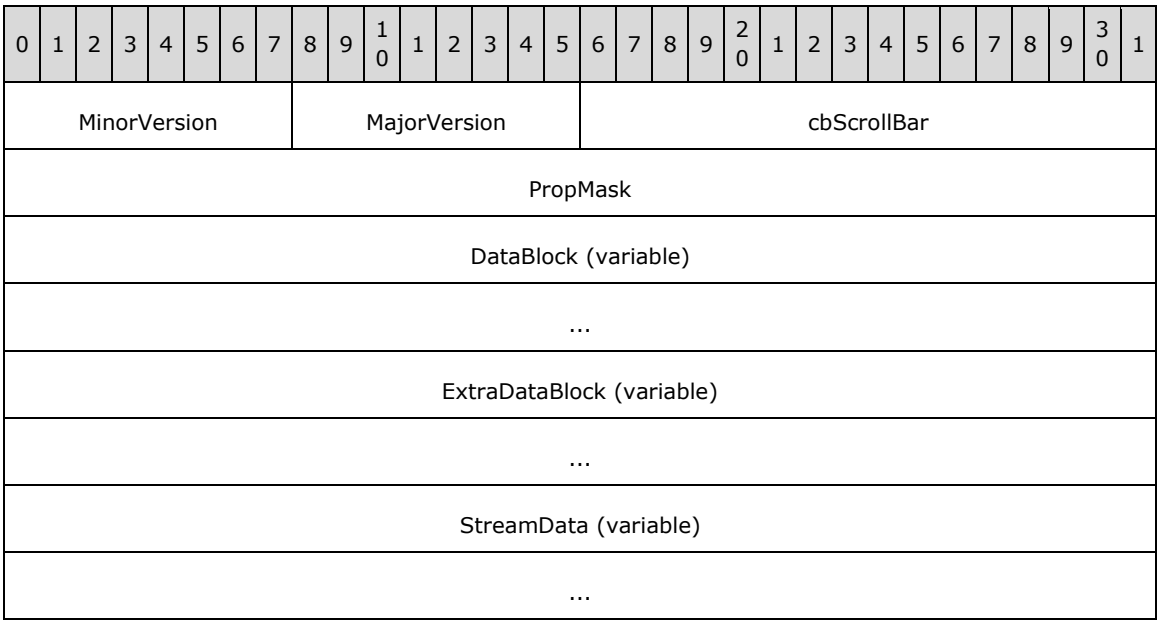
TransitionEffect (4 bytes): An fmTransitionEffect that specifies the value of the TransitionEffect property.

TransitionPeriod (4 bytes): An unsigned integer that specifies the value of the TransitionPeriod property.

2.2.7 ScrollBar Control Structure

2.2.7.1 ScrollBarControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbScrollBar (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): A ScrollBarPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A ScrollBarDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A ScrollBarExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A ScrollBarStreamData that specifies picture properties of the control that are not set to the file format defaults.

2.2.7.2 ScrollBarPropMask

Specifies the properties of the control are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	UnusedBits2														

A - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the ScrollBarControl that contains this **ScrollBarPropMask**.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the ScrollBarControl that contains this **ScrollBarPropMask**.

C - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the ScrollBarControl that contains this **ScrollBarPropMask**.

D - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the ScrollBarControl that contains this **ScrollBarPropMask**. MUST be set to 1.

E - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the ScrollBarControl that contains this **ScrollBarPropMask**.

F - fMin (1 bit): Specifies whether the Min property is stored in the **DataBlock.Min** of the ScrollBarControl that contains this **ScrollBarPropMask**.

G - fMax (1 bit): Specifies whether the Max property is stored in the **DataBlock.Max** of the ScrollBarControl that contains this **ScrollBarPropMask**.

H - fPosition (1 bit): Specifies whether the Position property is stored in the **DataBlock.Position** of the ScrollBarControl that contains this **ScrollBarPropMask**.

I - UnusedBits1 (1 bit): MUST be set to zero.

J - fPrevEnabled (1 bit): When **fVariousPropertyBits** is set to 1, this MUST be equal to the inverse value of **DataBlock.VariousPropertyBits.Enabled** of the ScrollBarControl that contains this **ScrollBarPropMask**. When **fVariousPropertyBits** is set to zero, this MUST be set to zero.

K - fNextEnabled (1 bit): MUST be equal to **fPrevEnabled**.

L - fSmallChange (1 bit): Specifies whether the SmallChange property is stored in the **DataBlock.SmallChange** of the ScrollBarControl that contains this **ScrollBarPropMask**.

M - fLargeChange (1 bit): Specifies whether the LargeChange property is stored in the **DataBlock.LargeChange** of the ScrollBarControl that contains this **ScrollBarPropMask**.

N - fOrientation (1 bit): Specifies whether the Orientation property is stored in the **DataBlock.Orientation** of the ScrollBarControl that contains this **ScrollBarPropMask**.

O - fProportionalThumb (1 bit): Specifies whether the ProportionalThumb property is stored in the **DataBlock.ProportionalThumb** of the ScrollBarControl that contains this **ScrollBarPropMask**.

P - fDelay (1 bit): Specifies whether the Delay property is stored in the **DataBlock.Delay** of the ScrollBarControl that contains this **ScrollBarPropMask**.

Q - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the ScrollBarControl that contains this **ScrollBarPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the ScrollBarControl.

UnusedBits2 (15 bits): MUST be set to 0.

2.2.7.3 ScrollBarDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the ScrollBarControl that contains this **ScrollBarDataBlock** is set to zero, the property value MUST NOT be stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
ForeColor (optional)																															
BackColor (optional)																															
VariousPropertyBits (optional)																															
MousePointer (optional)											Padding1 (variable)																				
...																															
Min (optional)																															
Padding2 (variable)																															
...																															
Max (optional)																															
Padding3 (variable)																															
...																															
Position (optional)																															
Padding4 (variable)																															
...																															
PrevEnabled (optional)																															
Padding5 (variable)																															
...																															
NextEnabled (optional)																															
Padding6 (variable)																															
...																															
SmallChange (optional)																															

Padding7 (variable)	
...	
LargeChange (optional)	
Padding8 (variable)	
...	
Orientation (optional)	
Padding9 (variable)	
...	
ProportionalThumb (optional)	Padding10 (variable)
...	
Delay (optional)	
Padding11 (variable)	
...	
MouseIcon (optional)	Padding12 (variable)
...	

ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Min (4 bytes): A signed integer that specifies the value of the Min property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Max (4 bytes): A signed integer that specifies the value of the Max property.

Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Position (4 bytes): A signed integer that specifies the value of the Position property.

Padding4 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

PrevEnabled (4 bytes): A signed integer that specifies the value of the PrevEnabled property.

Padding5 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

NextEnabled (4 bytes): A signed integer that specifies the value of the NextEnabled property.

Padding6 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

SmallChange (4 bytes): A signed integer that specifies the value of the SmallChange property.

Padding7 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

LargeChange (4 bytes): A signed integer that specifies the value of the LargeChange property.

Padding8 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Orientation (4 bytes): An fmOrientation that specifies the value of the Orientation property.

Padding9 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

ProportionalThumb (2 bytes): A signed integer that specifies the value of the ProportionalThumb property.

Padding10 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Delay (4 bytes): An unsigned integer that specifies the value of the Delay property.

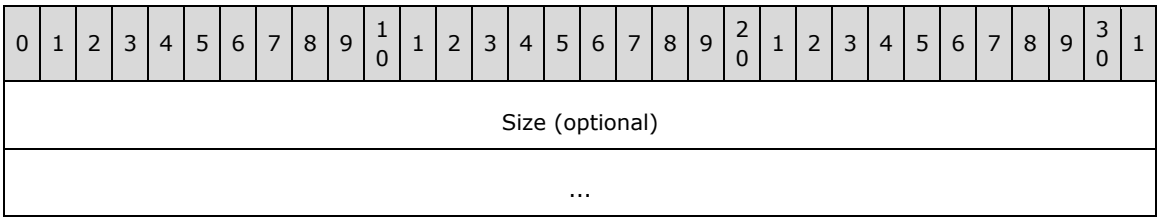
Padding11 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the ScrollBarControl that contains this **ScrollBarDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Padding12 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **ScrollBarDataBlock** divisible by 4.

2.2.7.4 ScrollBarExtraDataBlock

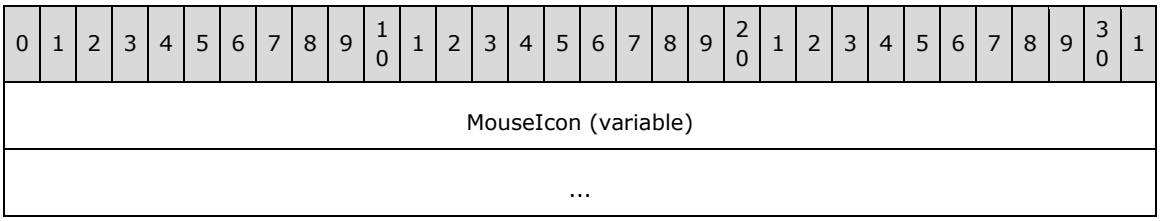
Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the ScrollBarControl that contains this **ScrollBarExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.



Size (8 bytes): An fmSize that specifies the Size property.

2.2.7.5 ScrollBarStreamData

Specifies picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the ScrollBarControl that contains this **ScrollBarStreamData** is set to zero, the property value MUST NOT be stored in the file.

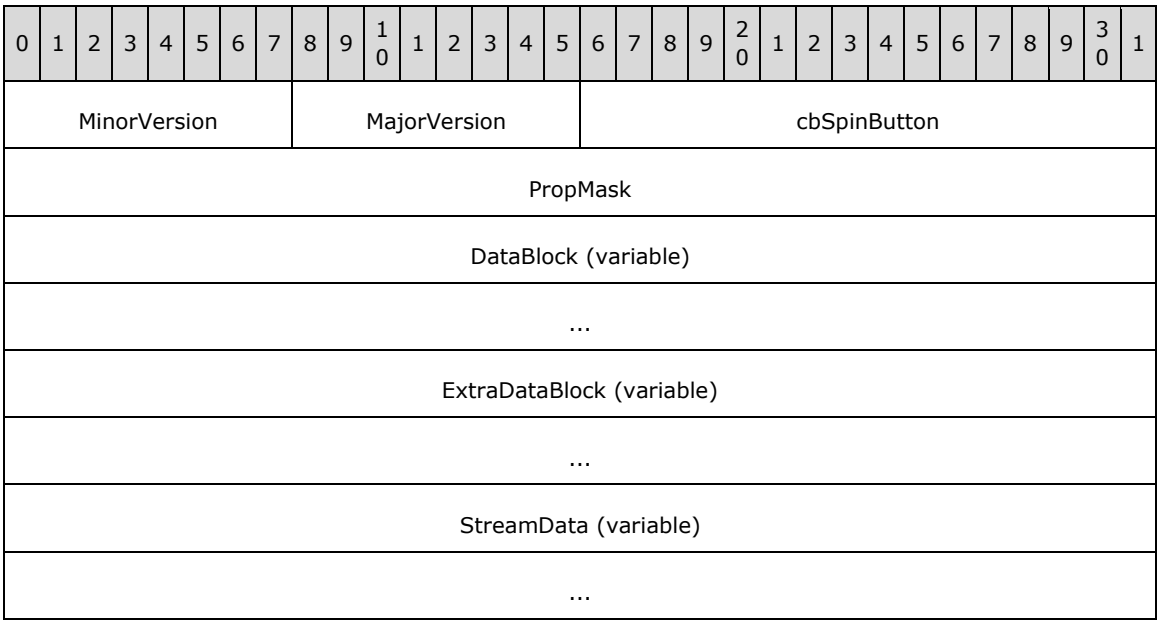


MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

2.2.8 SpinButton Control Structure

2.2.8.1 SpinButtonControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbSpinButton (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): A SpinButtonPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A SpinButtonDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A SpinButtonExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A SpinButtonStreamData that specifies picture properties of the control that are not set to the file format defaults.

2.2.8.2 SpinButtonPropMask

Specifies the properties of the control are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	UnusedBits2																	

A - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the SpinButtonControl that contains this **SpinButtonPropMask**.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the SpinButtonControl that contains this **SpinButtonPropMask**.

C - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the SpinButtonControl that contains this **SpinButtonPropMask**.

D - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the SpinButtonControl that contains this **SpinButtonPropMask**. MUST be set to 1.

E - UnusedBits1 (1 bit): MUST be set to zero.

F - fMin (1 bit): Specifies whether the Min property is stored in the **DataBlock.Min** of the SpinButtonControl that contains this **SpinButtonPropMask**.

G - fMax (1 bit): Specifies whether the Max property is stored in the **DataBlock.Max** of the SpinButtonControl that contains this **SpinButtonPropMask**.

H - fPosition (1 bit): Specifies whether the Position property is stored in the **DataBlock.Position** of the SpinButtonControl that contains this **SpinButtonPropMask**.

I - fPrevEnabled (1 bit): When **fVariousPropertyBits** is set to 1, this MUST be equal to the inverse value of **DataBlock.VariousPropertyBits.Enabled** of the SpinButtonControl that contains this **SpinButtonPropMask**. When **fVariousPropertyBits** is set to zero, this MUST be set to zero.

J - fNextEnabled (1 bit): MUST be equal to **fPrevEnabled**.

K - fSmallChange (1 bit): Specifies whether the SmallChange property is stored in the **DataBlock.SmallChange** of the SpinButtonControl that contains this **SpinButtonPropMask**.

L - fOrientation (1 bit): Specifies whether the Orientation property is stored in the **DataBlock.Orientation** of the SpinButtonControl that contains this **SpinButtonPropMask**.

M - fDelay (1 bit): Specifies whether the Delay property is stored in the **DataBlock.Delay** of the SpinButtonControl that contains this **SpinButtonPropMask**.

N - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the SpinButtonControl that contains this **SpinButtonPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the SpinButtonControl.

O - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the SpinButtonControl that contains this **SpinButtonPropMask**.

UnusedBits2 (17 bits): MUST be set to zero.

2.2.8.3 SpinButtonDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the SpinButtonControl that contains this **SpinButtonDataBlock** is set to zero, the property value MUST NOT be stored in the file.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="32">ForeColor (optional)</td></tr>
<tr><td colspan="32">BackColor (optional)</td></tr>
<tr><td colspan="32">VariousPropertyBits (optional)</td></tr>
<tr><td colspan="32">Min (optional)</td></tr>
<tr><td colspan="32">Max (optional)</td></tr>
<tr><td colspan="32">Position (optional)</td></tr>
<tr><td colspan="32">PrevEnabled (optional)</td></tr>
<tr><td colspan="32">NextEnabled (optional)</td></tr>
<tr><td colspan="32">SmallChange (optional)</td></tr>
<tr><td colspan="32">Orientation (optional)</td></tr>
<tr><td colspan="32">Delay (optional)</td></tr>
<tr><td colspan="16">MouseIcon (optional)</td><td colspan="8">MousePointer (optional)</td><td colspan="8">Padding (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

Min (4 bytes): A signed integer that specifies the value of the Min property.

Max (4 bytes): A signed integer that specifies the value of the Max property.

Position (4 bytes): A signed integer that specifies the value of the Position property.

PrevEnabled (4 bytes): A signed integer that specifies the value of the PrevEnabled property.

NextEnabled (4 bytes): A signed integer that specifies the value of the NextEnabled property.

SmallChange (4 bytes): A signed integer that specifies the value of the SmallChange property.

Orientation (4 bytes): An fmOrientation that specifies the value of the Orientation property.

Delay (4 bytes): An unsigned integer that specifies the value of the Delay property.

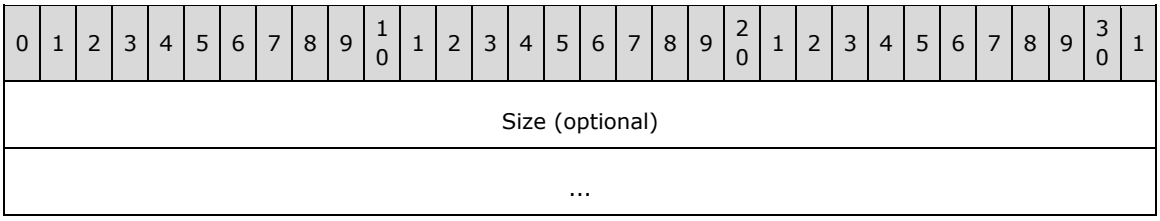
MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the SpinButtonControl that contains this **SpinButtonDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

Padding (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **SpinButtonDataBlock** divisible by 4.

2.2.8.4 SpinButtonExtraDataBlock

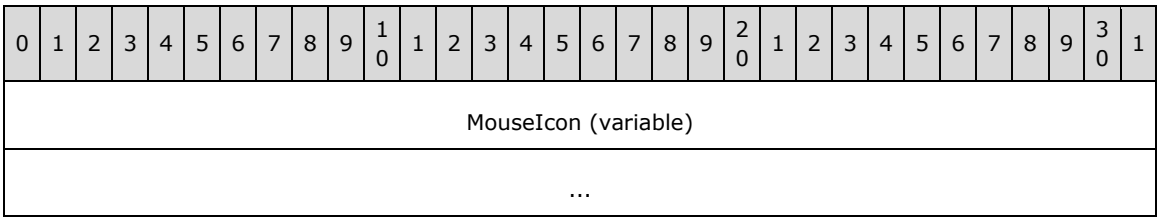
Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the SpinButtonControl that contains this **SpinButtonExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.



Size (8 bytes): An fmSize that specifies the Size property.

2.2.8.5 SpinButtonStreamData

Specifies picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the SpinButtonControl that contains this **SpinButtonStreamData** is set to zero, the property value MUST NOT be stored in the file.

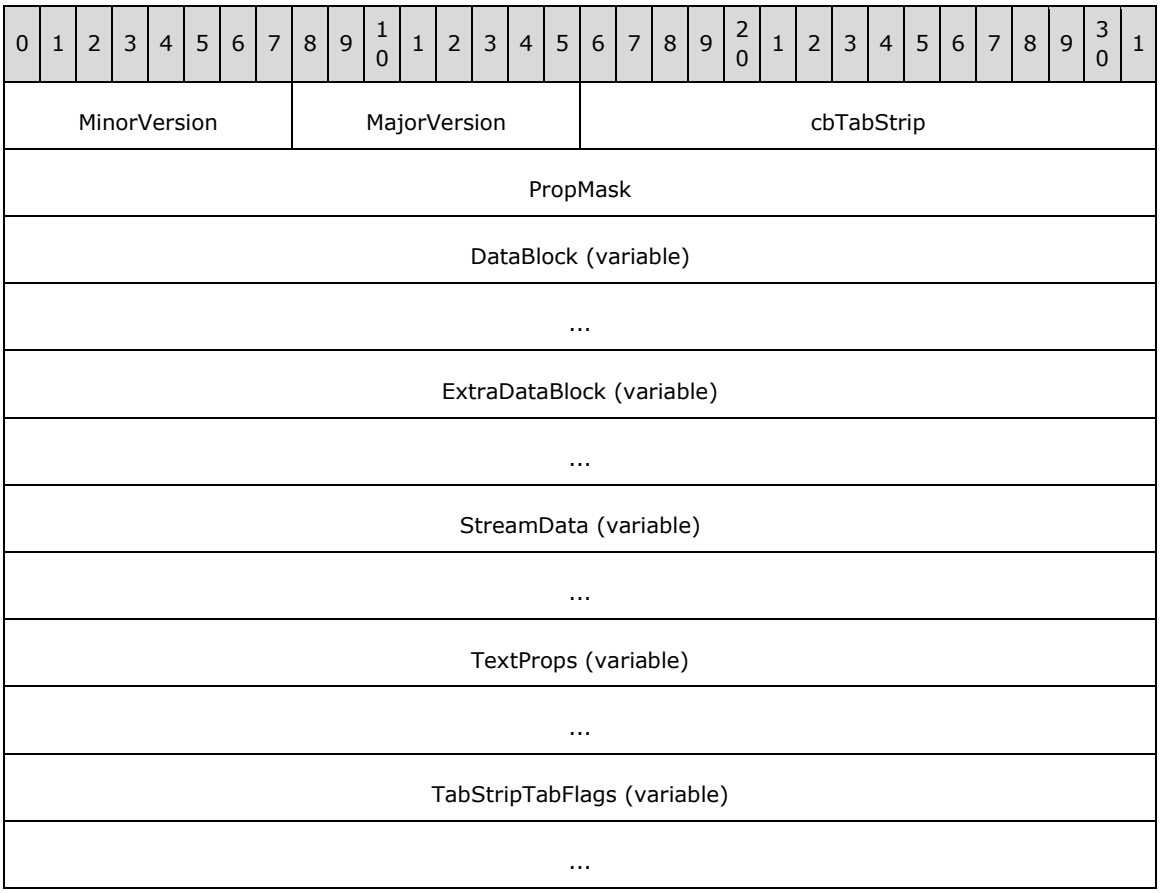


MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

2.2.9 TabStrip Control Structure

2.2.9.1 TabStripControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbTabStrip (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock** and **ExtraDataBlock**.

PropMask (4 bytes): A TabStripPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A TabStripDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A TabStripExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A TabStripStreamData that specifies picture properties of the control that are not set to the file format defaults.

TextProps (variable): A TextProps that specifies text-related properties of the control.

TabStripTabFlags (variable): A TabStripTabFlagData that specifies properties that apply to a single tab in the **TabStrip**.

2.2.9.2 TabStripPropMask

Specifies the properties of the control that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	UnusedBits						

A - fListIndex (1 bit): Specifies whether the ListIndex property is stored in the **DataBlock.ListIndex** of the TabStripControl that contains this **TabStripPropMask**.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the TabStripControl that contains this **TabStripPropMask**.

C - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the TabStripControl that contains this **TabStripPropMask**.

D - Unused1 (1 bit): MUST be set to zero.

E - fSize (1 bit): Specifies whether the Size property is stored in the **ExtraDataBlock.Size** of the TabStripControl that contains this **TabStripPropMask**. MUST be set to 1.

F - fItems (1 bit): Specifies whether **ExtraDataBlock.Items** and **DataBlock.ItemsSize** are stored in the TabStripControl that contains this **TabStripPropMask**.

G - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the TabStripControl that contains this **TabStripPropMask**.

H - Unused2 (1 bit): MUST be set to zero.

I - fTabOrientation (1 bit): Specifies whether the TabOrientation property is stored in the **DataBlock.TabOrientation** of the TabStripControl that contains this **TabStripPropMask**.

J - fTabStyle (1 bit): Specifies whether the TabStyle property is stored in the **DataBlock.TabStyle** of the TabStripControl that contains this **TabStripPropMask**.

K - fMultiRow (1 bit): Specifies whether the value of the MultiRow property is *not* the file format default.

L - fTabFixedWidth (1 bit): Specifies whether the TabFixedWidth property is stored in the **DataBlock.TabFixedWidth** of the TabStripControl that contains this **TabStripPropMask**.

M - fTabFixedHeight (1 bit): Specifies whether the TabFixedHeight property is stored in the **DataBlock.TabFixedHeight** of the TabStripControl that contains this **TabStripPropMask**.

N - fTooltips (1 bit): Specifies whether the value of the Tooltips property is *not* the file format default.

O - Unused3 (1 bit): MUST be set to zero.

P - fTipStrings (1 bit): Specifies whether **ExtraDataBlock.TipStrings** and **DataBlock.TipStringsSize** are stored in the TabStripControl that contains this **TabStripPropMask**.

Q - Unused4 (1 bit): MUST be set to zero.

R - fNames (1 bit): Specifies whether **ExtraDataBlock.TabNames** and **DataBlock.NamesSize** are stored in the TabStripControl that contains this **TabStripPropMask**.

S - fVariousPropertyBits (1 bit): Specifies whether the VariousPropertyBits property is stored in the **DataBlock.VariousPropertyBits** of the TabStripControl that contains this **TabStripPropMask**.

T - fNewVersion (1 bit): Specifies whether the value of the NewVersion property is *not* the file format default. MUST be set to 1.

U - fTabsAllocated (1 bit): Specifies whether the TabsAllocated property is stored in the **DataBlock.TabsAllocated** of the TabStripControl that contains this **TabStripPropMask**.

V - fTags (1 bit): Specifies whether **ExtraDataBlock.Tags** and **DataBlock.TagsSize** are stored in the TabStripControl that contains this **TabStripPropMask**.

W - fTabData (1 bit): Specifies whether the TabData property is stored in the **DataBlock.TabData** of the TabStripControl that contains this **TabStripPropMask**.

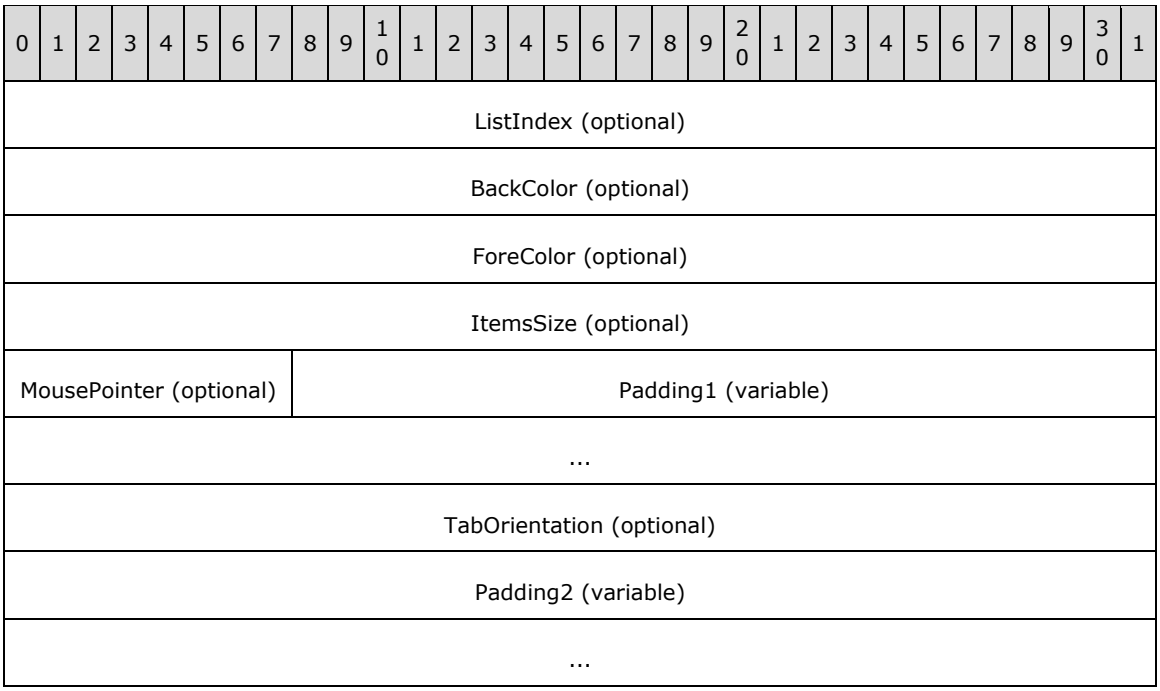
X - fAccelerator (1 bit): Specifies whether **ExtraDataBlock.Accelerators** and **DataBlock.AcceleratorsSize** are stored in the TabStripControl that contains this **TabStripPropMask**.

Y - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the TabStripControl that contains this **TabStripPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the TabStripControl.

UnusedBits (7 bits): MUST be set to zero.

2.2.9.3 TabStripDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the TabStripControl that contains this **TabStripDataBlock** is set to zero, the property value MUST NOT be stored in the file.



TabStyle (optional)
Padding3 (variable)
...
TabFixedWidth (optional)
Padding4 (variable)
...
TabFixedHeight (optional)
Padding5 (variable)
...
TipStringsSize (optional)
Padding6 (variable)
...
NamesSize (optional)
Padding7 (variable)
...
VariousPropertyBits (optional)
Padding8 (variable)
...
TabsAllocated (optional)
Padding9 (variable)
...
TagsSize (optional)
Padding10 (variable)
...
TabData (optional)

Padding11 (variable)	
...	
AcceleratorsSize (optional)	
Padding12 (variable)	
...	
MouseIcon (optional)	Padding13 (variable)
...	

ListIndex (4 bytes): A signed integer that specifies the value of the ListIndex property.

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

ItemsSize (4 bytes): An unsigned integer that specifies the size, in bytes, of the **ExtraDataBlock.Items** of the TabStripControl that contains this **TabStripDataBlock**. MUST be greater than zero.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TabOrientation (4 bytes): An fmTabOrientation that specifies the value of the TabOrientation property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TabStyle (4 bytes): An fmTabStyle that specifies the value of the TabStyle property.

Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TabFixedWidth (4 bytes): An unsigned integer that specifies the value of the TabFixedWidth property.

Padding4 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TabFixedHeight (4 bytes): An unsigned integer that specifies the value of the TabFixedHeight property.

Padding5 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TipStringsSize (4 bytes): An unsigned integer that specifies the size, in bytes, of the **ExtraDataBlock.TipStrings** of the TabStripControl that contains this **TabStripDataBlock**. MUST be greater than zero.

Padding6 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

NamesSize (4 bytes): An unsigned integer that specifies the size, in bytes, of the **ExtraDataBlock.TabNames** of the TabStripControl that contains this **TabStripDataBlock**. MUST be greater than zero.

Padding7 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

VariousPropertyBits (4 bytes): A VariousPropertiesBitfield that specifies the value of the VariousPropertyBits properties.

Padding8 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TabsAllocated (4 bytes): An unsigned integer that specifies the value of the TabsAllocated property.

Padding9 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TagsSize (4 bytes): An unsigned integer that specifies the size, in bytes, of the **ExtraDataBlock.Tags** of the TabStripControl that contains this **TabStripDataBlock**. MUST be greater than zero.

Padding10 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

TabData (4 bytes): An unsigned integer that specifies the value of the TabData property.

Padding11 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

AcceleratorsSize (4 bytes): An unsigned integer that specifies the size, in bytes, of the **ExtraDataBlock.Accelerators** of the TabStripControl that contains this **TabStripDataBlock**. MUST be greater than zero.

Padding12 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the TabStripControl that contains this **TabStripDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Padding13 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **TabStripDataBlock** divisible by 4.

2.2.9.4 TabStripExtraDataBlock

Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the TabStripControl that contains this **TabStripExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.

Properties that can have a different value for each tab MUST be stored if at least one tab has a non-default value for the property. The property values are persisted as arrays, as specified in section 2.1.1.2.5.

The order of elements in **Items** specifies the order of the tabs in this control. The other property arrays MUST use the same order if they are stored.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
Size (optional)																															
...																															
Items (variable)																															
...																															
TipStrings (variable)																															
...																															
TabNames (variable)																															
...																															
Tags (variable)																															
...																															
Accelerators (variable)																															
...																															

Size (8 bytes): An fmSize that specifies the value of the Size property.

Items (variable): An array of ArrayString. Specifies the value of the Caption property for each tab in the TabStripControl that contains this **TabStripExtraDataBlock**. The first element in the array corresponds to the first tab, and so on. The size, in bytes, of this array MUST be equal to the value of the **DataBlock.ItemsSize** in the TabStripControl that contains this **TabStripExtraDataBlock**.

TipStrings (variable): An array of ArrayString. Specifies the value of the Tooltip property for each tab in the TabStripControl that contains this **TabStripExtraDataBlock**. The first element in the array corresponds to the first tab, and so on. The size, in bytes, of this array MUST be equal to the value of the **DataBlock.TipStringsSize** in the TabStripControl that contains this **TabStripExtraDataBlock**.

TabNames (variable): An array of ArrayString. Specifies the value of the Name property for each tab in the TabStripControl that contains this **TabStripExtraDataBlock**. The first element in the array corresponds to the first tab, and so on. The size, in bytes, of this array MUST be equal to the value of the **DataBlock.NamesSize** in the TabStripControl that contains this **TabStripExtraDataBlock**.

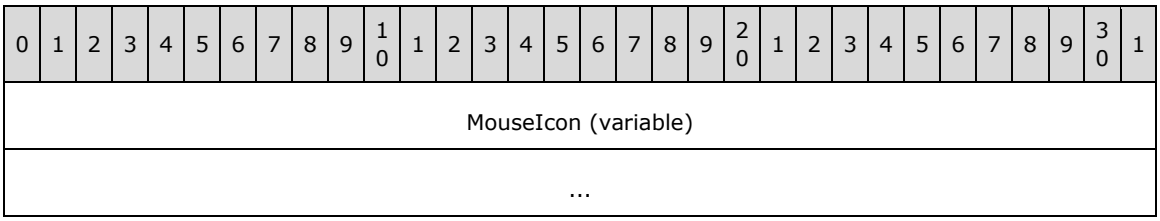
Tags (variable): An array of ArrayString. Specifies the value of the Tag property for each tab in the TabStripControl that contains this **TabStripExtraDataBlock**. The first element in the array corresponds to the first tab, and so on. The size, in bytes, of this array MUST be equal to the value of the **DataBlock.TagsSize** in the TabStripControl that contains this **TabStripExtraDataBlock**.

Accelerators (variable): An array of ArrayString. Specifies the value of the Accelerator property for each tab in the TabStripControl that contains this **TabStripExtraDataBlock**. The first element in the array corresponds to the first tab, and so on. The size, in bytes, of this array MUST be equal to

the value of the **DataBlock.AcceleratorsSize** in the TabStripControl that contains this **TabStripExtraDataBlock**.

2.2.9.5 TabStripStreamData

Specifies picture properties of the control that are not set to their file format defaults. If the corresponding bit in the **PropMask** of the TabStripControl that contains this **TabStripStreamData** is set to zero, the property value MUST NOT be stored in the file.

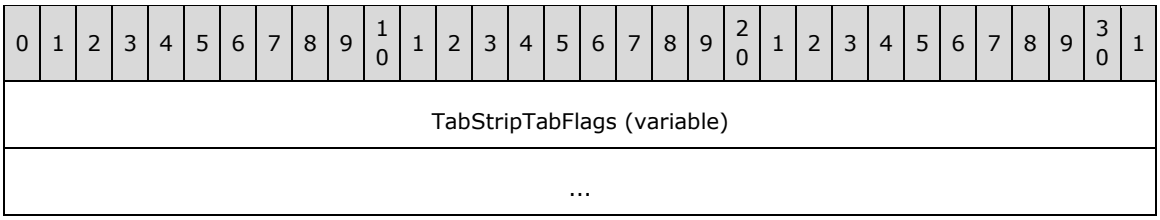


MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

2.2.9.6 TabStripTabFlagData

Specifies properties for individual tabs in the TabStripControl that contains this **TabStripTabFlagData**. If **PropMask.fTabData** is set to zero, these properties MUST NOT be stored in the file.

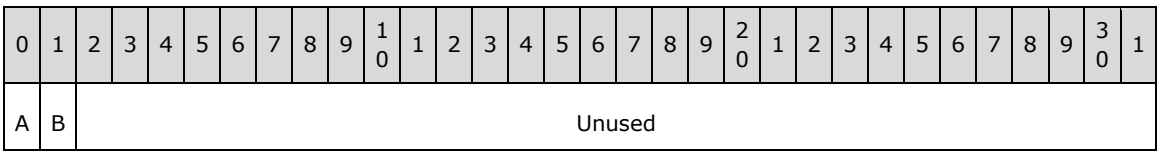
Arrays in this structure are ordered. The first element in each array corresponds to the first tab. The order of elements in **ExtraDataBlock.Items** specifies the order of the tabs.



TabStripTabFlags (variable): An array of TabStripTabFlag. Specifies **Boolean** properties of each tab. The number of elements in this array MUST be equal to the value of the **DataBlock.TabData** of the TabStripControl that contains this **TabStripTabFlagData**.

2.2.9.7 TabStripTabFlag

Specifies whether a tab is visible and whether it is enabled.



A - fTabVisible (1 bit): Specifies whether the tab is visible.

B - fTabEnabled (1 bit): Specifies whether the tab is enabled.

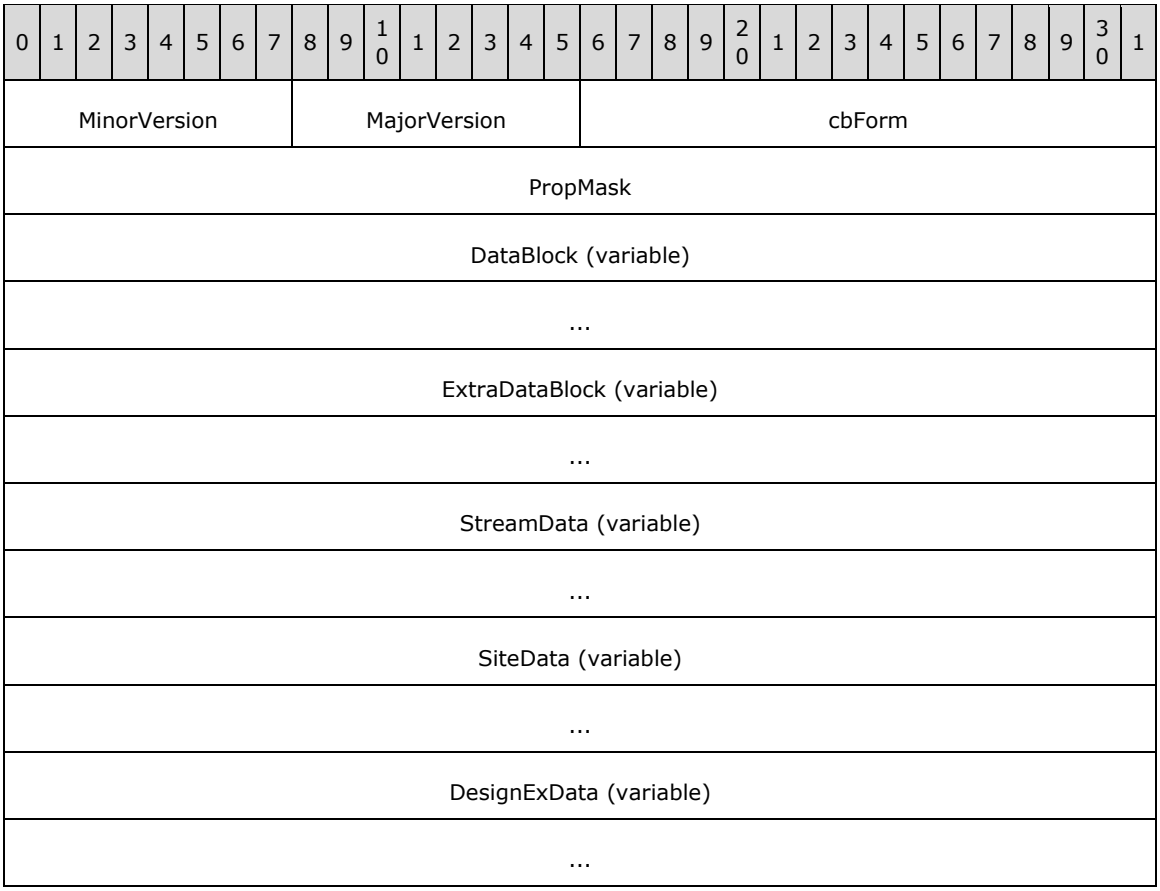
Unused (30 bits): MUST be set to zero.

2.2.10 UserForm Structure

Forms are parent controls. They are persisted in binary format as specified in section 2.1.2. This section specifies the format of the Form stream.

2.2.10.1 FormControl

Specifies the structure of the control as persisted to a **stream**.



MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x04.

cbForm (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock** and **ExtraDataBlock**.

PropMask (4 bytes): A FormPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A FormDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A FormExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

StreamData (variable): A FormStreamData that specifies font and picture properties of the control that are not set to the file format defaults.

SiteData (variable): A FormSiteData that specifies properties of the embedded controls of a form.

DesignExData (variable): A FormDesignExData that specifies properties of the design surface of the form.

2.2.10.2 FormPropMask

Specifies the properties of the control that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E		F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	Unused3				

A - Unused1 (1 bit): MUST be set to zero.

B - fBackColor (1 bit): Specifies whether the BackColor property is stored in the **DataBlock.BackColor** of the FormControl that contains this **FormPropMask**.

C - fForeColor (1 bit): Specifies whether the ForeColor property is stored in the **DataBlock.ForeColor** of the FormControl that contains this **FormPropMask**.

D - fNextAvailableID (1 bit): Specifies whether the NextAvailableID property is stored in the **DataBlock.NextAvailableID** of the FormControl that contains this **FormPropMask**.

E - Unused2 (2 bits): MUST be set to zero.

F - fBooleanProperties (1 bit): Specifies whether the BooleanProperties property is stored in the **DataBlock.BooleanProperties** of the FormControl that contains this **FormPropMask**.

G - fBorderStyle (1 bit): Specifies whether the BorderStyle property is stored in the **DataBlock.BorderStyle** of the FormControl that contains this **FormPropMask**.

H - fMousePointer (1 bit): Specifies whether the MousePointer property is stored in the **DataBlock.MousePointer** of the FormControl that contains this **FormPropMask**.

I - fScrollBars (1 bit): Specifies whether the ScrollBars property is stored in the **DataBlock.ScrollBars** of the FormControl that contains this **FormPropMask**.

J - fDisplayedSize (1 bit): Specifies whether the DisplayedSize property is stored in the **ExtraDataBlock.DisplayedSize** of the FormControl that contains this **FormPropMask**.

K - fLogicalSize (1 bit): Specifies whether the LogicalSize property is stored in the **ExtraDataBlock.LogicalSize** of the FormControl that contains this **FormPropMask**.

L - fScrollPosition (1 bit): Specifies whether the ScrollPosition property is stored in the **ExtraDataBlock.ScrollPosition** of the FormControl that contains this **FormPropMask**.

M - fGroupCnt (1 bit): Specifies whether the GroupCount property is stored in the **DataBlock.GroupCnt** of the FormControl that contains this **FormPropMask**.

N - Reserved (1 bit): MUST be set to zero and MUST be ignored.

O - fMouseIcon (1 bit): Specifies whether the MouseIcon property is stored in the **StreamData.MouseIcon** of the FormControl that contains this **FormPropMask**. When this bit is set to 1, a value of 0xFFFF MUST be stored in the **DataBlock.MouseIcon** of the FormControl.

P - fCycle (1 bit): Specifies whether the Cycle property is stored in the **DataBlock.Cycle** of the FormControl that contains this **FormPropMask**.

Q - fSpecialEffect (1 bit): Specifies whether the SpecialEffect property is stored in the **DataBlock.SpecialEffect** of the FormControl that contains this **FormPropMask**.

R - fBorderColor (1 bit): Specifies whether the BorderColor property is stored in the **DataBlock.BorderColor** of the FormControl that contains this **FormPropMask**.

S - fCaption (1 bit): Specifies whether the size and compression flag of the Caption property are stored in the **DataBlock.LengthAndCompression** of the FormControl that contains this **FormPropMask** and the Caption string is stored in the **ExtraDataBlock.Caption** of the FormControl.

T - fFont (1 bit): Specifies whether the Font property is stored in the **StreamData.GuidAndFont** of the FormControl that contains this **FormPropMask**.

U - fPicture (1 bit): Specifies whether the Picture property is stored in the **StreamData.Picture** of the FormControl that contains this **FormPropMask**.

V - fZoom (1 bit): Specifies whether the Zoom property is stored in the **DataBlock.Zoom** of the FormControl that contains this **FormPropMask**.

W - fPictureAlignment (1 bit): Specifies whether the PictureAlignment property is stored in the **DataBlock.PictureAlignment** of the FormControl that contains this **FormPropMask**.

X - fPictureTiling (1 bit): Specifies whether the value of the PictureTiling property is not the file format default.

Y - fPictureSizeMode (1 bit): Specifies whether the PictureSizeMode property is stored in the **DataBlock.PictureSizeMode** of the FormControl that contains this **FormPropMask**.

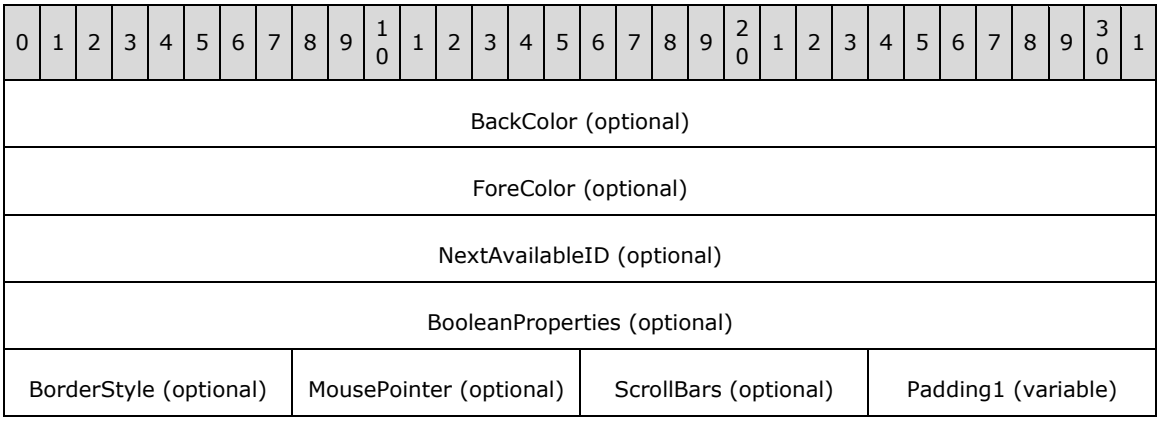
Z - fShapeCookie (1 bit): Specifies whether the ShapeCookie property is stored in the **DataBlock.ShapeCookie** of the FormControl that contains this **FormPropMask**.

a - fDrawBuffer (1 bit): Specifies whether the DrawBuffer property is stored in the **DataBlock.DrawBuffer** of the FormControl that contains this **FormPropMask**. MUST be set to 1.

Unused3 (4 bits): MUST be set to zero.

2.2.10.3 FormDataBlock

Specifies the properties of the Form that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the FormControl that contains this **FormDataBlock** is set to zero, the property value MUST NOT be stored in the file.



...
GroupCnt (optional)
Padding2 (variable)
...

MouseIcon (optional)	Cycle (optional)	SpecialEffect (optional)

Padding3 (variable)
...
BorderColor (optional)
Padding4 (variable)
...
LengthAndCompression (optional)
Padding5 (variable)
...

Font (optional)	Padding6 (variable)

...

Picture (optional)	Padding7 (variable)

...
Zoom (optional)

PictureAlignment (optional)	PictureSizeMode (optional)	Padding8 (variable)

...
ShapeCookie (optional)
Padding9 (variable)
...
DrawBuffer (optional)
Padding10 (variable)

...

BackColor (4 bytes): An OLE_COLOR that specifies the value of the BackColor property.

ForeColor (4 bytes): An OLE_COLOR that specifies the value of the ForeColor property.

NextAvailableID (4 bytes): An unsigned integer that specifies the value of the NextAvailableID property.

BooleanProperties (4 bytes): An unsigned integer that specifies the value of the BooleanProperties property.

BorderStyle (1 byte): An fmBorderStyle that specifies the value of the BorderStyle property.

MousePointer (1 byte): An unsigned integer that specifies the value of the MousePointer property.

ScrollBars (1 byte): A FormScrollBarFlags that specifies the value of the ScrollBars property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

GroupCnt (4 bytes): A signed integer that specifies the value of the GroupCount property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

MouseIcon (2 bytes): MUST be set to 0xFFFF when the **PropMask.fMouseIcon** of the FormControl that contains this **FormDataBlock** is set to 1. Not present when **PropMask.fMouseIcon** is set to zero.

Cycle (1 byte): An fmCycle that specifies the value of the Cycle property.

SpecialEffect (1 byte): An fmSpecialEffect that specifies the value of the SpecialEffect property.

Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

BorderColor (4 bytes): An OLE_COLOR that specifies the value of the BorderColor property.

Padding4 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

LengthAndCompression (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Caption property.

Padding5 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Font (2 bytes): MUST be set to 0xFFFF when the **PropMask.fFont** of the FormControl that contains this **FormDataBlock** is set to 1. Not present when **PropMask.fFont** is set to zero.

Padding6 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Picture (2 bytes): MUST be set to 0xFFFF when the **PropMask.fPicture** of the FormControl that contains this **FormDataBlock** is set to 1. Not present when **PropMask.fPicture** is set to zero.

Padding7 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

Zoom (4 bytes): An unsigned integer that specifies the value of the Zoom property.

PictureAlignment (1 byte): An unsigned integer that specifies the value of the PictureAlignment property.

PictureSizeMode (1 byte): An unsigned integer that specifies the value of the PictureSizeMode property.

Padding8 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

ShapeCookie (4 bytes): An unsigned integer that specifies the value of the ShapeCookie property.

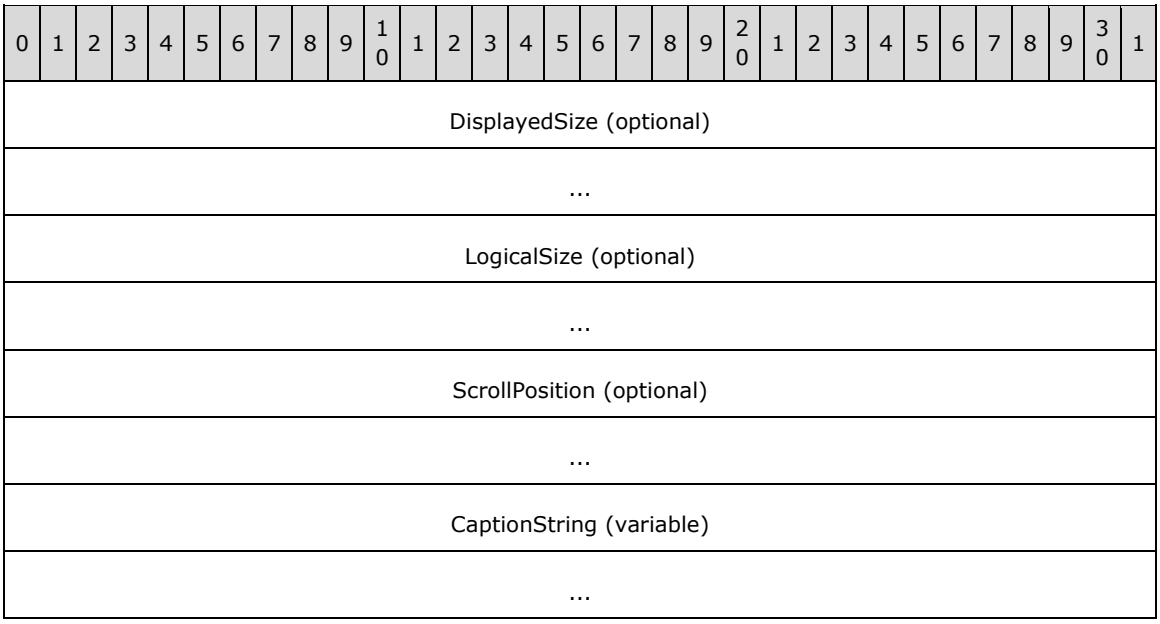
Padding9 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

DrawBuffer (4 bytes): An unsigned integer that specifies the value of the DrawBuffer property.

Padding10 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **FormDataBlock** divisible by 4.

2.2.10.4 FormExtraDataBlock

Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the FormControl that contains this **FormExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.



DisplayedSize (8 bytes): An fmSize that specifies the value of the DisplayedSize property.

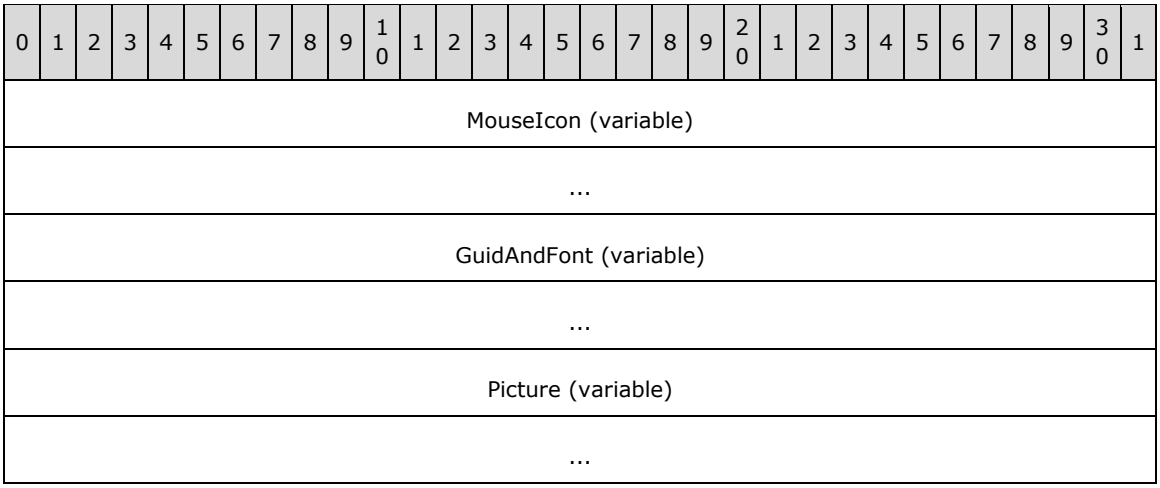
LogicalSize (8 bytes): An fmSize that specifies the value of the LogicalSize property.

ScrollPosition (8 bytes): An fmPosition that specifies the value of the ScrollPosition property.

CaptionString (variable): An fmString that specifies the Caption property. The size and compression of the string is specified by the **DataBlock.LengthAndCompression** of the FormControl that contains this **FormExtraDataBlock**.

2.2.10.5 FormStreamData

Specifies font and picture properties of the control that are not set to the file format defaults. If the corresponding bit in the **PropMask** of the FormControl that contains this **FormStreamData** is set to zero, the property value MUST NOT be stored in the file.



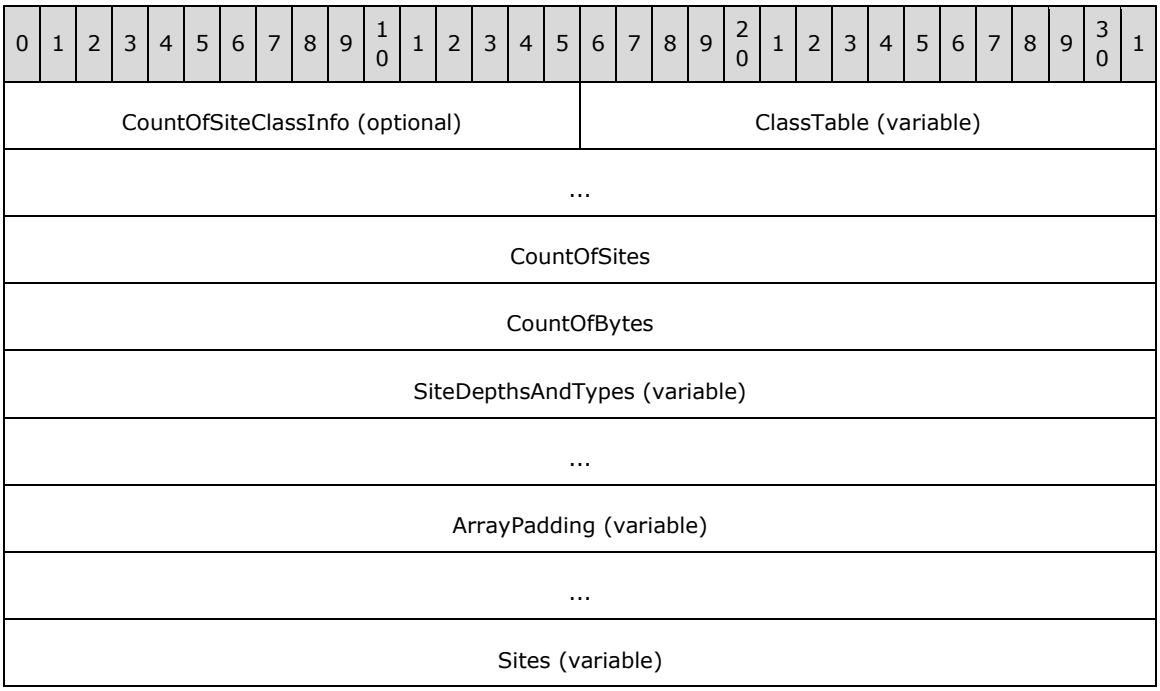
MouseIcon (variable): A GuidAndPicture that specifies the MouseIcon property.

GuidAndFont (variable): A GuidAndFont that specifies the Font property.

Picture (variable): A GuidAndPicture that specifies the Picture property.

2.2.10.6 FormSiteData

The depth, specified in section 2.2.10.7, SITE_TYPE and properties of each embedded control in the FormControl that contains this **FormSiteData**.



...

CountOfSiteClassInfo (2 bytes): An unsigned integer that specifies the number of elements in **ClassTable**. This field MUST NOT be stored if the value of **DataBlock.BooleanProperties.FORM_FLAG_DONTSAVECLASSTABLE** in the FormControl that contains this **FormSiteData** is set to 1.

ClassTable (variable): An array of SiteClassInfo structures. Specifies class information of controls that are not one of the types specified by FormEmbeddedActiveXControlCached. If **CountOfSiteClassInfo** is set to zero or not stored, this field MUST NOT be stored.

CountOfSites (4 bytes): An unsigned integer that specifies the number of elements in **Sites**.

CountOfBytes (4 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **SiteDepthsAndTypes**, **ArrayPadding**, and **Sites**.

SiteDepthsAndTypes (variable): An array of FormObjectDepthTypeCount. Specifies the depth as specified in section 2.2.10.7 and SITE_TYPE of each control in **Sites**. The order of this array MUST be the same as the order of **Sites**, but one element in this array can specify more than one consecutive element in **Sites**. If the **fCount** of an element in this array is set to 1, **TypeOrCount** specifies the number of consecutive elements in **Sites** represented by that element in this array. The sum of the number of elements in this array in which **fCount** is set to zero and the **TypeOrCount** of each element in this array in which **fCount** is set to 1 MUST equal **CountOfSites**.

ArrayPadding (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes that, when added to the size, in bytes, of **SiteDepthsAndTypes**, produces a sum divisible by 4.

Sites (variable): An array of OleSiteConcreteControl. Specifies properties of each embedded control in the FormControl that contains this **FormSiteData**.

2.2.10.7 FormObjectDepthTypeCount

Specifies the depth and SITE_TYPE of an embedded control. Optionally specifies a count of consecutive controls that have the same depth and SITE_TYPE.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
Depth								TypeOrCount							A	OptionalType (optional)															

Depth (1 byte): An unsigned integer that specifies the depth of an embedded control, that is, how many controls exist in the hierarchy between the embedded control and the parent control.

TypeOrCount (7 bits): An unsigned integer. If **fCount** is set to zero, this field specifies the SITE_TYPE of an embedded control. If **fCount** is set to 1, this field specifies the number of consecutive embedded controls of the same depth and SITE_TYPE.

A - fCount (1 bit): Specifies whether **TypeOrCount** is a count of consecutive embedded controls.

OptionalType (1 byte): Specifies the SITE_TYPE of **TypeOrCount** consecutive embedded controls when **fCount** is set to 1. If **fCount** is set to zero, this field MUST NOT be stored.

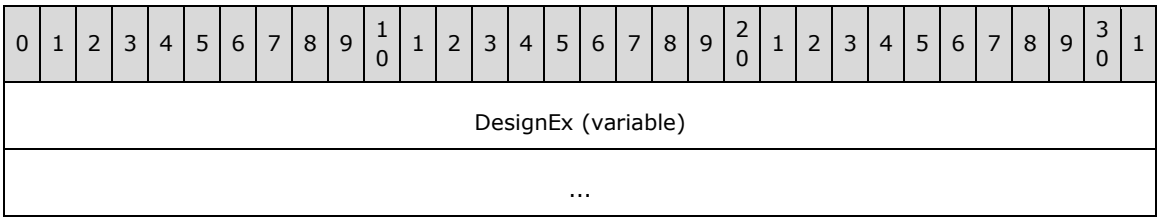
2.2.10.8 SITE_TYPE

Specifies the type of an embedded control. MUST be set to 1.

Name	Value	Meaning
ST_Ole	0x01	An OLE control.

2.2.10.9 FormDesignExData

Specifies design-time properties of a form.



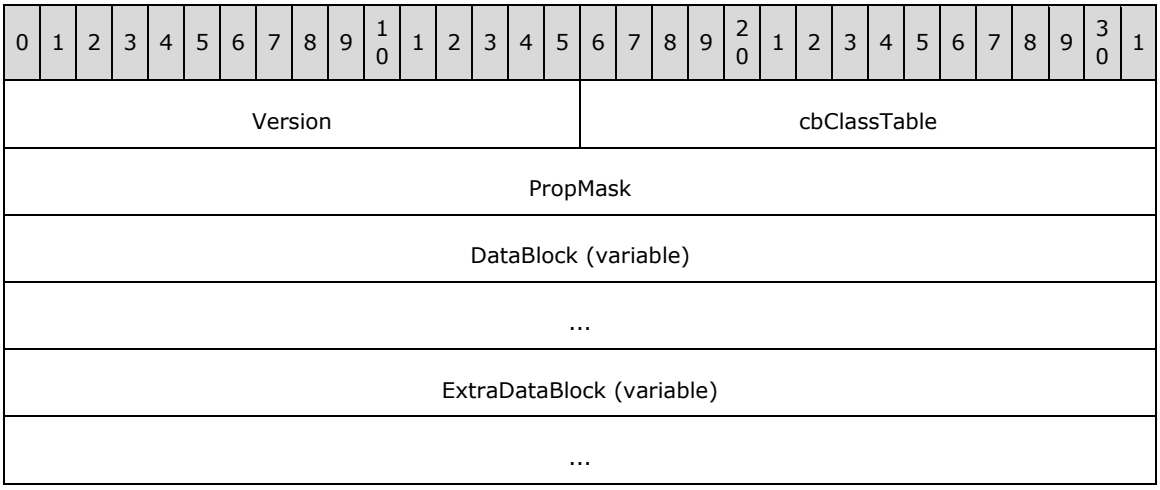
DesignEx (variable): A DesignExtender that specifies the properties of the design surface of this form. If the value of **DataBlock.BooleanProperties.FORM_FLAG_DESINKPERSISTED** of the FormControl that contains this **FormDesignExData** is set to zero, this structure MUST NOT be stored.

2.2.10.10 ClassTable Structure

This structure specifies the **type information** of a **ControlNonCached** in a FormEmbeddedActiveXControl. The control MUST be able to interact through OLE Automation, as specified in [MS-OAUT].

2.2.10.10.1 SiteClassInfo

Specifies the structure, as persisted to a **stream**, of the **type information** of an embedded **ActiveX control**.



Version (2 bytes): An unsigned integer that specifies the version of this **SiteClassInfo**. MUST be set to 0x0000.

cbClassTable (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): A ClassInfoPropMask that specifies which properties of this **SiteClassInfo** are not set to the file format default.

DataBlock (variable): A ClassInfoDataBlock that specifies the properties of this **SiteClassInfo** that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A ClassInfoExtraDataBlock that specifies the properties of this **SiteClassInfo** that are larger than 4 bytes and are not set to the file format defaults.

2.2.10.10.2 ClassInfoPropMask

Specifies the properties of the SiteClassInfo that contains this ClassInfoPropMask that are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Unused2																	

A - fClsID (1 bit): Specifies whether **ExtraDataBlock.ClsID** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

B - fDispEvent (1 bit): Specifies whether **ExtraDataBlock.DispEvent** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

C - Unused1 (1 bit): MUST be set to zero.

D - fDefaultProg (1 bit): Specifies whether **ExtraDataBlock.DefaultProg** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

E - fClassFlags (1 bit): Specifies whether **DataBlock.ClassTableFlags** and **DataBlock.VarFlags** are stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

F - fCountOfMethods (1 bit): Specifies whether **DataBlock.CountOfMethods** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

G - fDispidBind (1 bit): Specifies whether **DataBlock.DispidBind** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

H - fGetBindIndex (1 bit): Specifies whether **DataBlock.GetBindIndex** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

I - fPutBindIndex (1 bit): Specifies whether **DataBlock.PutBindIndex** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

J - fBindType (1 bit): Specifies whether **DataBlock.BindType** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

K - fGetValueIndex (1 bit): Specifies whether **DataBlock.GetValueIndex** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

L - fPutValueIndex (1 bit): Specifies whether **DataBlock.PutValueIndex** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

M - fValueType (1 bit): Specifies whether **DataBlock.ValueType** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

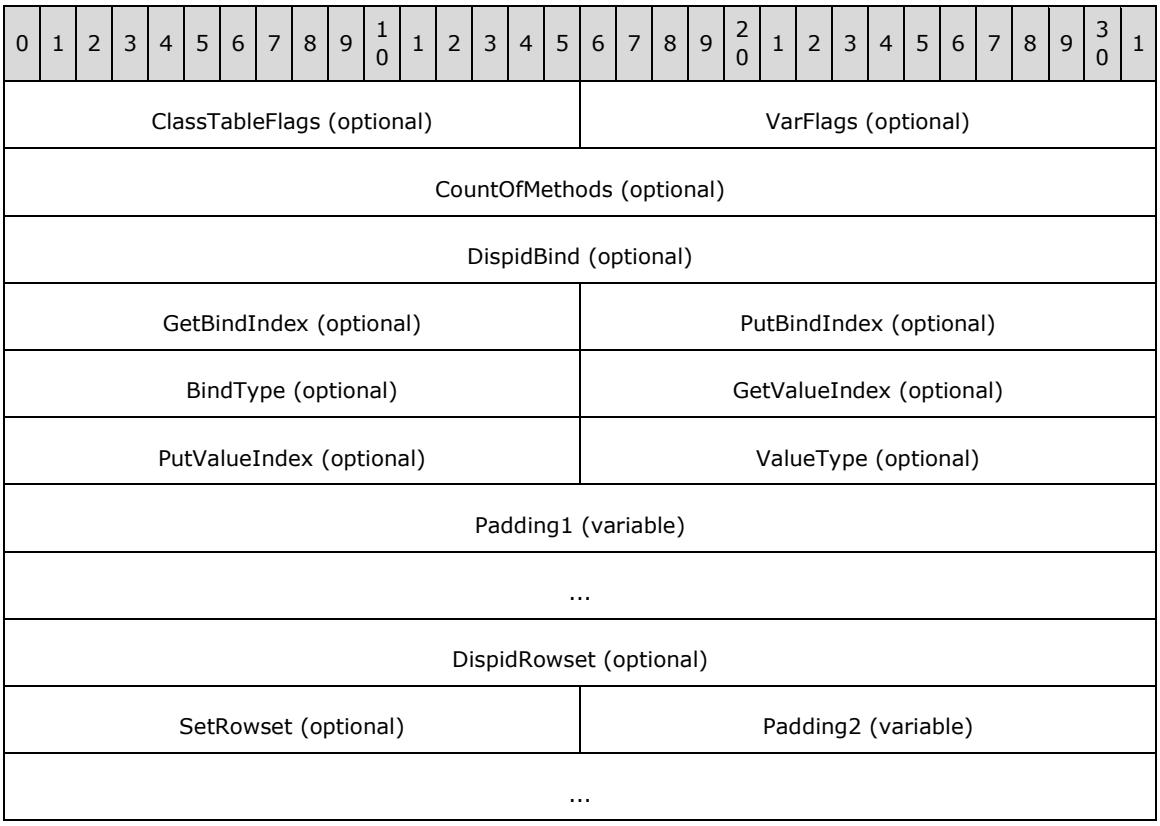
N - fDispidRowset (1 bit): Specifies whether **DataBlock.DispidRowset** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

O - fSetRowset (1 bit): Specifies whether **DataBlock.SetRowset** is stored in the SiteClassInfo that contains this **ClassInfoPropMask**.

Unused2 (17 bits): MUST be set to zero.

2.2.10.10.3 ClassInfoDataBlock

Specifies the properties of the **type information** of the embedded control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the SiteClassInfo that contains this **ClassInfoDataBlock** is set to zero, the field MUST NOT be stored in the file.



ClassTableFlags (2 bytes): A CLSTABLE_FLAGS that specifies **Boolean** properties of the type information.

The file format default is 0x0000.

VarFlags (2 bytes): A VARFLAGS, as specified in [MS-OAUT] section 2.2.18, that specifies Boolean properties of the type information.

The file format default is 0x0000.

CountOfMethods (4 bytes): An unsigned integer that specifies the number of methods on the default **dual interface** of the type information.

The file format default is 0x00000000.

DispidBind (4 bytes): An unsigned integer that specifies the **IDispatch identifier (DispID)** of the default bindable property, as specified in [MS-OAUT] section 2.2.49.5.2, in this type information. The value of this field is the **memid** field of the VARDESC of the function, as specified in [MS-OAUT] section 2.2.43. The **VARDESC.wVarFlags** field MUST be set to 0x00000014, or FUNCFLAG_FBINDABLE and FUNCFLAG_FDISPLAYBIND, as specified in [MS-OAUT] section 2.2.11.

The file format default is 0xFFFFFFFF, DISPID_UNKNOWN.

GetBindIndex (2 bytes): An unsigned integer that specifies the index of the "get" function of the default bindable property, as specified in [MS-OAUT] section 2.2.49.5.2, into the **dynamic virtual table** of a type information that implements a dual interface. The value of this field is the **oVft** field of the FUNCDESC that specifies the function, as specified in [MS-OAUT] section 2.2.42. The **memid** field of this FUNCDESC MUST NOT be set to DISPID_VALUE, as specified in [MS-OAUT] section 2.2.32.1. The **invkind** field of this FUNCDESC MUST be set to INVOKE_PROPERTYGET, as specified in [MS-OAUT] section 2.2.14.

The file format default is 0x0000.

PutBindIndex (2 bytes): An unsigned integer that specifies the index of the "put" function of the default bindable property, as specified in [MS-OAUT] section 2.2.49.5.2, into the dynamic virtual table of a type information that implements a dual interface. The value of this field is the **oVft** field of the FUNCDESC that specifies the function, as specified in [MS-OAUT] section 2.2.42. The **memid** field of this FUNCDESC MUST NOT be set to DISPID_VALUE, as specified in [MS-OAUT] section 2.2.32.1. The **invkind** field of this FUNCDESC MUST be set to INVOKE_PROPERTYPUT, as specified in [MS-OAUT] section 2.2.14.

The file format default is 0x0000.

BindType (2 bytes): A **variant type** that specifies the type of the default bindable property, as specified in [MS-OAUT] section 2.2.49.5.2. The value of this field is the **vt** field of the TYPEDESC, as specified in [MS-OAUT] section 2.2.37, of the **FUNCDESC.elemdescFunc**, as specified in [MS-OAUT] section 2.2.42, of the function referenced by **GetBindIndex** or **PutBindIndex** in this **ClassInfoDataBlock**.

The file format default is 0x0000, VT_EMPTY.

GetValueIndex (2 bytes): An unsigned integer that specifies the index of the function that retrieves the value of the control into the dynamic virtual table of the class. The value of this field is the **oVft** field of the FUNCDESC that specifies the function, as specified in [MS-OAUT] section 2.2.42. The **memid** of the FUNCDESC MUST be set to DISPID_VALUE, as specified in [MS-OAUT] section 2.2.32.1. The **invkind** field of the FUNCDESC MUST be set to INVOKE_PROPERTYGET, as specified in [MS-OAUT] section 2.2.14.

The file format default is 0x0000.

PutValueIndex (2 bytes): An unsigned integer that specifies the index of the function that sets the value of the control into the dynamic virtual table of the class. The value of this field is the **oVft** field of the FUNCDESC that specifies the function, as specified in [MS-OAUT] section 2.2.42. The **memid** of the FUNCDESC MUST be set to DISPID_VALUE, as specified in [MS-OAUT] section 2.2.32.1. The **invkind** field of the FUNCDESC MUST be set to INVOKE_PROPERTYPUT, as specified in [MS-OAUT] section 2.2.14.

The file format default is 0x0000.

ValueType (2 bytes): A variant type that specifies the type of the value that is returned in response to DISPID_VALUE. The value of this field is the **vt** field of the TYPEDESC, as specified in [MS-OAUT] section 2.2.37, of the FUNCDESC.**elemdescFunc**, as specified in [MS-OAUT] section 2.2.42, of the function referenced by **GetValueIndex** or **PutValueIndex** in this **ClassInfoDataBlock**.

The file format default is 0x0000, VT_EMPTY.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes needed to align the following property, as specified by PaddingAndAlignment.

DispidRowset (4 bytes): An unsigned integer that specifies the DispID of a property that supports a method for fetching rows sequentially, getting the data from those rows, and managing rows. The value of this field is the **memid** field of the FUNCDESC that specifies the property "set" method, as specified in [MS-OAUT] section 2.2.42, or of the VARDESC that specifies the property, as specified in [MS-OAUT] section 2.2.43. The value of **memid** can be determined by the algorithm specified in section 2.6.1.1.

The file format default is 0xFFFFFFFF, DISPID_UNKNOWN.

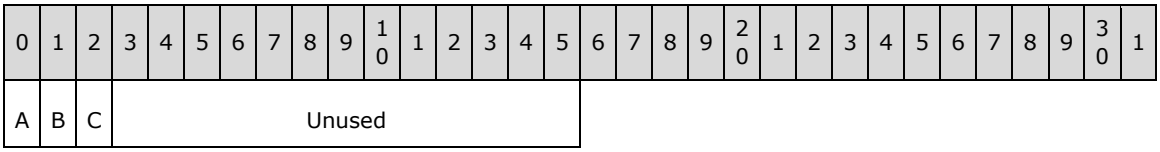
SetRowset (2 bytes): An unsigned integer that specifies the index of the "set" function into the dynamic virtual table of the class, for a property that supports a method for fetching rows sequentially, getting the data from those rows, and managing rows. The value of this field is the **oVft** field of the FUNCDESC that specifies the property "set" method, as specified in [MS-OAUT] section 2.2.42. The value of **oVft** can be determined by the algorithm specified in section 2.6.1.2.

The file format default is 0x0000.

Padding2 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this ClassInfoDataBlock divisible by 4.

2.2.10.10.4 CLSTABLE_FLAGS

A bit field that specifies **Boolean** properties of a SiteClassInfo.



A - fExclusiveValue (1 bit): Specifies whether the **typeKind** member of the TYPEATTR that describes this **type information**, as specified in [MS-OAUT] section 2.2.44, is set to TKIND_ALIAS, as specified in [MS-OAUT] section 2.2.17.

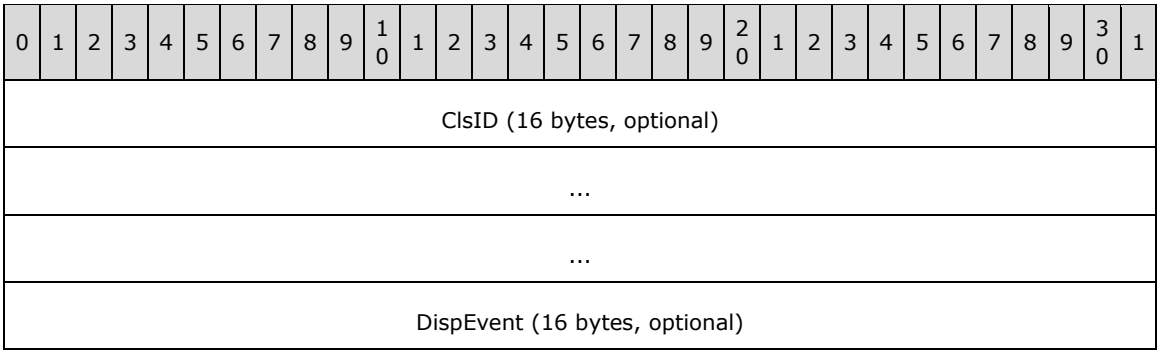
B - fDualInterface (1 bit): Specifies whether this type information implements a **dual interface**.

C - fNoAggregation (1 bit): Specifies whether this type information supports aggregation. A value of 1 specifies that the control does not support aggregation.

Unused (13 bits): MUST be set to zero.

2.2.10.10.5 ClassInfoExtraDataBlock

Specifies the properties of the class that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the SiteClassInfo that contains this **ClassInfoDataBlock** is set to zero, the field MUST NOT be stored in the file.



...
...
DefaultProg (16 bytes, optional)
...
...

ClsID (16 bytes): A GUID, as specified in [MS-DTYP], that specifies the **CLSID** of a control.

The file format default is {00000000-0000-0000-0000-000000000000}.

DispEvent (16 bytes): A GUID, as specified in [MS-DTYP], that specifies the source interface, as specified in [MS-OAUT] section 2.2.49.8, in this **type information**.

The file format default is {00020400-0000-0000-C000-000000000046}.

DefaultProg (16 bytes): A GUID, as specified in [MS-DTYP], that specifies the default interface, as specified in [MS-OAUT] section 2.2.49.8, in this type information.

The file format default is {00020400-0000-0000-C000-000000000046}.

2.2.10.11 DesignExtender Structure

The design surface of a UserForm control.

2.2.10.11.1 DesignExtender

Specifies design-time properties of a FormControl as persisted to a **stream**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
MinorVersion								MajorVersion								cbDesignExtender															
PropMask																															
DataBlock (variable)																															
...																															

MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

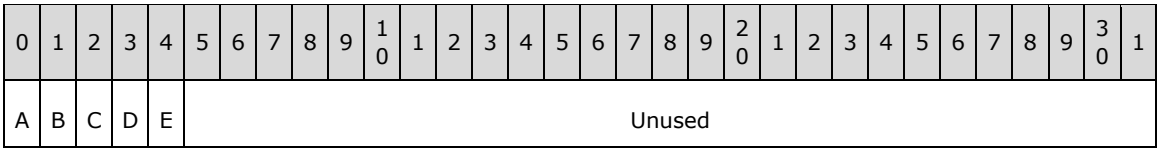
cbDesignExtender (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask** and **DataBlock**.

PropMask (4 bytes): A DesignExtenderPropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A DesignExtenderDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

2.2.10.11.2 DesignExtenderPropMask

Specifies the properties of the control are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.



A - fBitFlags (1 bit): Specifies whether the BitFlags property is stored in the **DataBlock.BitFlags** of the DesignExtender that contains this DesignExtenderPropMask.

B - fGridX (1 bit): Specifies whether the GridX property is stored in the **DataBlock.GridX** of the DesignExtender that contains this DesignExtenderPropMask.

C - fGridY (1 bit): Specifies whether the GridY property is stored in the **DataBlock.GridY** of the DesignExtender that contains this DesignExtenderPropMask.

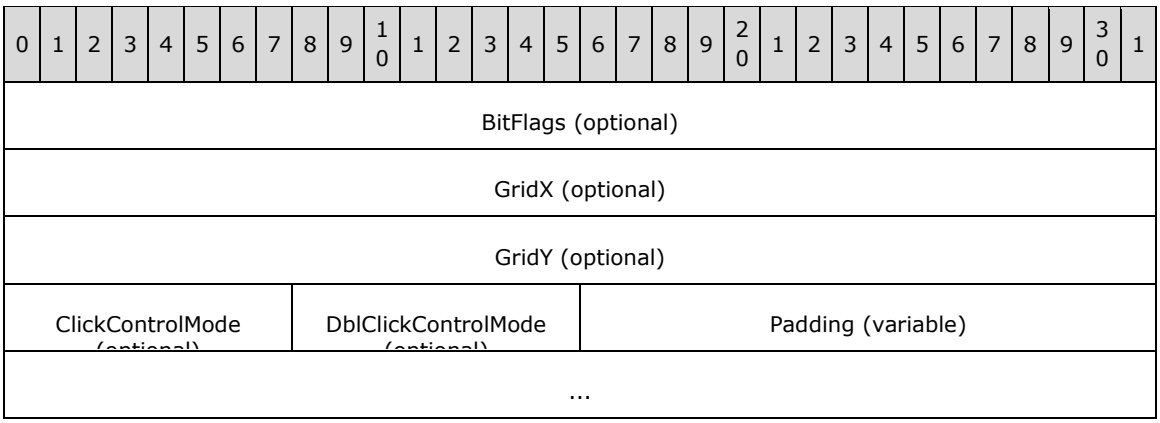
D - fClickControlMode (1 bit): Specifies whether the ClickControlMode property is stored in the **DataBlock.ClickControlMode** of the DesignExtender that contains this DesignExtenderPropMask.

E - fDblClickControlMode (1 bit): Specifies whether the DblClickControlMode property is stored in the **DataBlock.DblClickControlMode** of the DesignExtender that contains this DesignExtenderPropMask.

Unused (27 bits): MUST be set to zero.

2.2.10.11.3 DesignExtenderDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the DesignExtender that contains this **DesignExtenderDataBlock** is set to zero, the property value MUST NOT be stored in the file.



BitFlags (4 bytes): A DX_MODE that specifies the BitFlags property.

GridX (4 bytes): A signed integer that specifies the value of the GridX property.

GridY (4 bytes): A signed integer that specifies the value of the GridY property.

ClickControlMode (1 byte): An **fmClickControlMode** that specifies the value of the ClickControlMode property.

DblClickControlMode (1 byte): An **fmDblClickControlMode** that specifies the value of the DblClickControlMode property.

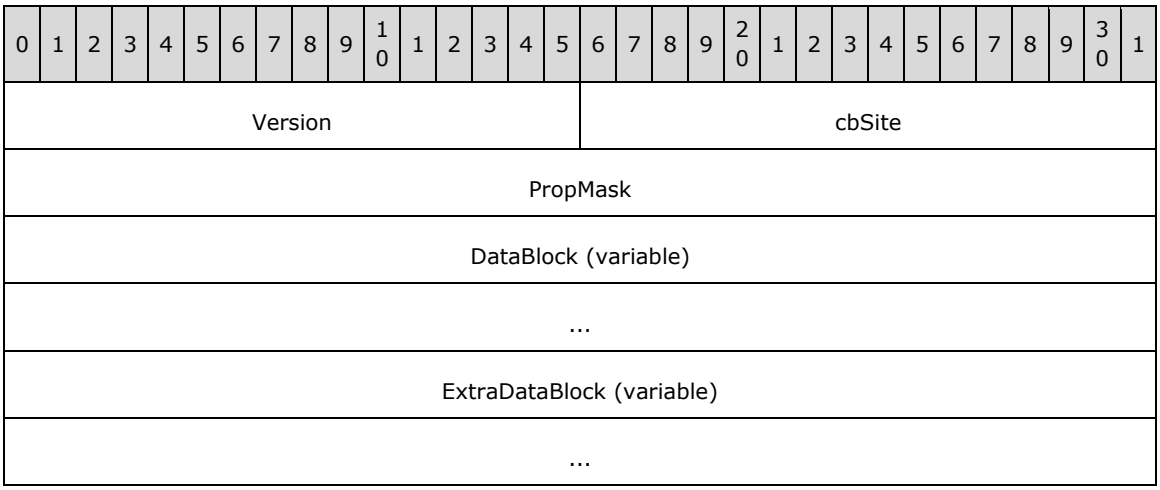
Padding (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this **DesignExtenderDataBlock** divisible by 4.

2.2.10.12 OleSiteConcrete Structure

Specifies properties stored for each embedded control in a UserForm control.

2.2.10.12.1 OleSiteConcreteControl

Specifies properties of embedded controls in a FormControl as persisted to a **stream**.



Version (2 bytes): An unsigned integer that specifies the version of the control. MUST be set to 0x0000.

cbSite (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock** and **ExtraDataBlock**.

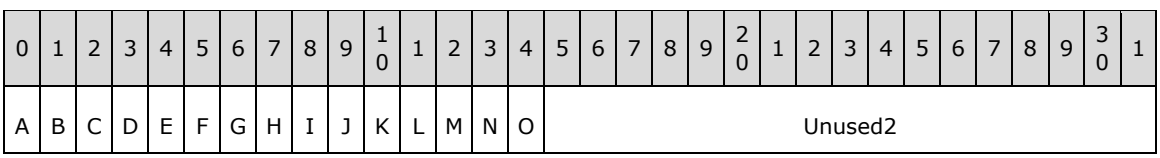
PropMask (4 bytes): A SitePropMask that specifies which properties of the control are not set to the file format default.

DataBlock (variable): A SiteDataBlock that specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A SiteExtraDataBlock that specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults.

2.2.10.12.2 SitePropMask

Specifies the properties of the control are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.



A - fName (1 bit): Specifies whether the size and compression flag of the Name property are stored in the **DataBlock.NameData** of the OleSiteConcreteControl that contains this SitePropMask and the Name string is stored in the **ExtraDataBlock.Name** of the OleSiteConcreteControl.

B - fTag (1 bit): Specifies whether the size and compression flag of the Tag property are stored in the **DataBlock.TagData** of the OleSiteConcreteControl that contains this SitePropMask and the Tag string is stored in the **ExtraDataBlock.Tag** of the OleSiteConcreteControl.

C - fID (1 bit): Specifies whether the ID property is stored in the **DataBlock.ID** of the OleSiteConcreteControl that contains this SitePropMask.

D - fHelpContextID (1 bit): Specifies whether the HelpContextID property is stored in the **DataBlock.HelpContextID** of the OleSiteConcreteControl that contains this SitePropMask.

E - fBitFlags (1 bit): Specifies whether the BitFlags property is stored in the **DataBlock.BitFlags** of the OleSiteConcreteControl that contains this SitePropMask.

F - fObjectStreamSize (1 bit): Specifies whether the ObjectStreamSize property is stored in the **DataBlock.ObjectStreamSize** of the OleSiteConcreteControl that contains this SitePropMask.

G - fTabIndex (1 bit): Specifies whether the TabIndex property is stored in the **DataBlock.TabIndex** of the OleSiteConcreteControl that contains this SitePropMask.

H - fClsidCacheIndex (1 bit): Specifies whether the ClsidCacheIndex property is stored in the **DataBlock.ClsidCacheIndex** of the OleSiteConcreteControl that contains this SitePropMask.

I - fPosition (1 bit): Specifies whether the Position property is stored in the **ExtraDataBlock.Position** of the OleSiteConcreteControl that contains this SitePropMask.

J - fGroupID (1 bit): Specifies whether the GroupID property is stored in the **DataBlock.GroupID** of the OleSiteConcreteControl that contains this SitePropMask.

K - Unused1 (1 bit): MUST be set to zero.

L - fControlTipText (1 bit): Specifies whether the size and compression flag of the Tooltip property are stored in the **DataBlock.ControlTipTextData** of the OleSiteConcreteControl that contains this SitePropMask and the Tooltip string is stored in the **ExtraDataBlock.ControlTipText** of the OleSiteConcreteControl.

M - fRuntimeLicKey (1 bit): Specifies whether the size and compression flag of the RuntimeLicKey property are stored in the **DataBlock.RuntimeLicKeyData** of the OleSiteConcreteControl that contains this SitePropMask and the RuntimeLicKey string is stored in the **ExtraDataBlock.RuntimeLicKeyData** of the OleSiteConcreteControl.

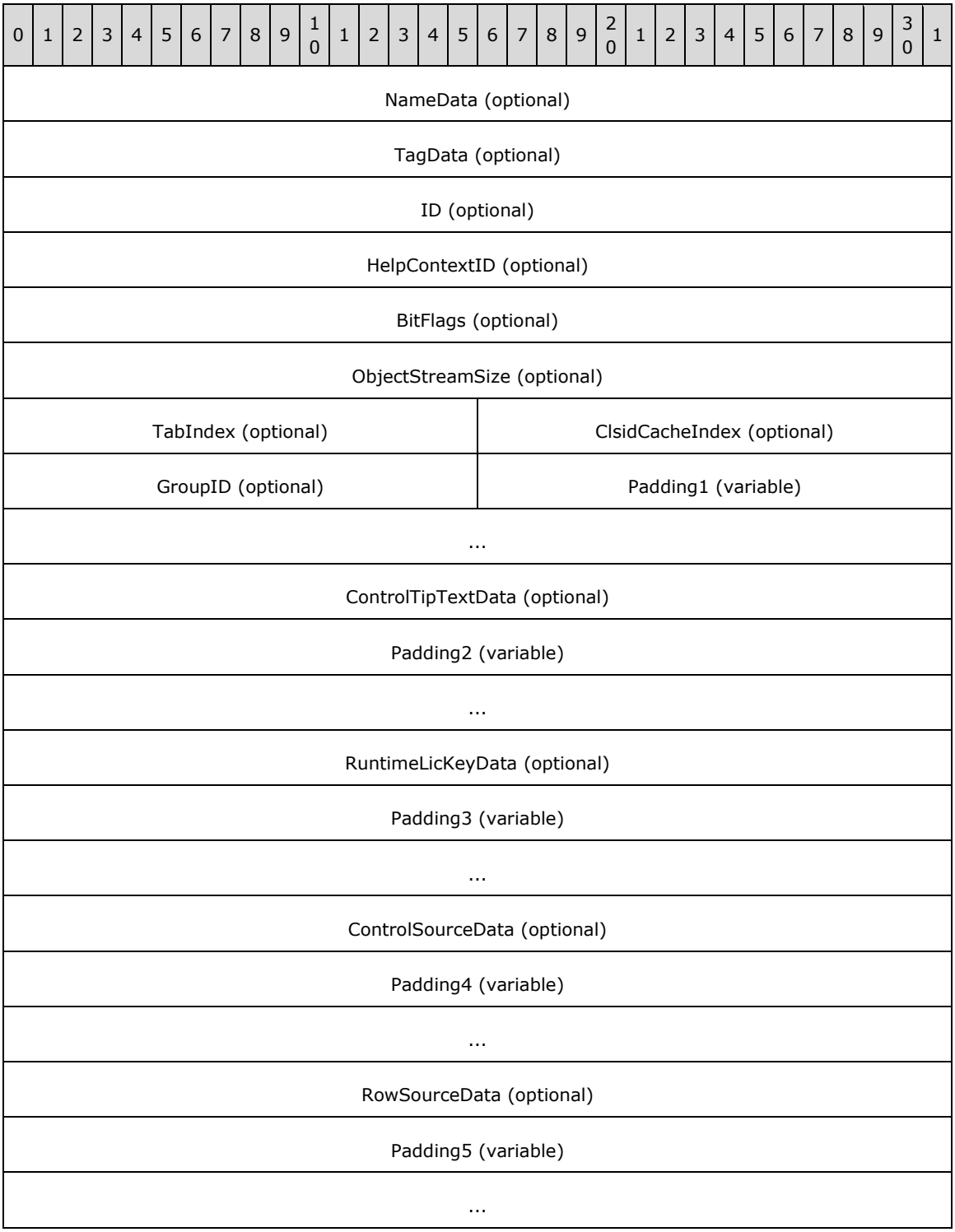
N - fControlSource (1 bit): Specifies whether the size and compression flag of the ControlSource property are stored in the **DataBlock.ControlSourceData** of the OleSiteConcreteControl that contains this SitePropMask and the ControlSource string is stored in the **ExtraDataBlock.ControlSource** of the OleSiteConcreteControl.

O - fRowSource (1 bit): Specifies whether the size and compression flag of the RowSource property are stored in the **DataBlock.RowSourceData** of the OleSiteConcreteControl that contains this SitePropMask and the RowSource string is stored in the **ExtraDataBlock.RowSource** of the OleSiteConcreteControl.

Unused2 (17 bits): MUST be set to zero.

2.2.10.12.3 SiteDataBlock

Specifies the properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the OleSiteConcrete that contains this SiteDataBlock is set to zero, the property value MUST NOT be stored in the file.



NameData (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Name property.

TagData (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Tag property.

ID (4 bytes): A signed integer that specifies the value of the ID property.

HelpContextID (4 bytes): A signed integer that specifies the value of the HelpContextID property.

BitFlags (4 bytes): A SITE_FLAG that specifies the value of the BitFlags property.

ObjectStreamSize (4 bytes): An unsigned integer that specifies the value of the ObjectStreamSize property.

TabIndex (2 bytes): A signed integer that specifies the value of the TabIndex property.

ClsidCacheIndex (2 bytes): A unsigned integer that specifies the value of the ClsidCacheIndex property.

GroupID (2 bytes): An unsigned integer that specifies the value of the GroupID property.

Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

ControlTipTextData (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the Tooltip property.

Padding2 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

RuntimeLicKeyData (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the RuntimeLicKey property.

Padding3 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

ControlSourceData (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the ControlSource property.

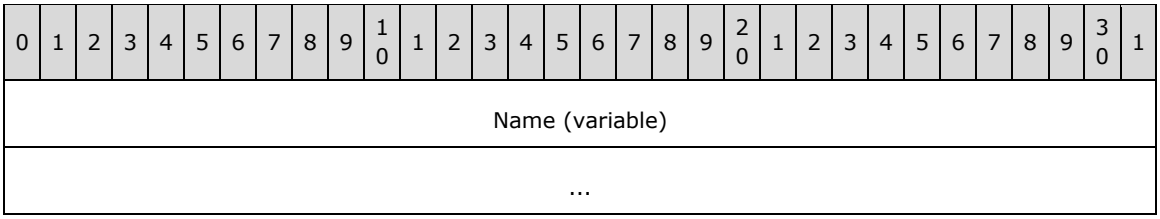
Padding4 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

RowSourceData (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the RowSource property.

Padding5 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this SiteDataBlock divisible by 4.

2.2.10.12.4 SiteExtraDataBlock

Specifies the properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the OleSiteConcrete that contains this SiteDataBlock is set to zero, the property value MUST NOT be stored in the file.



Tag (variable)
...
SitePosition (optional)
...
ControlTipText (variable)
...
RuntimeLicKey (variable)
...
ControlSource (variable)
...
RowSource (variable)
...

Name (variable): An fmString that specifies the value of the Name property.

Tag (variable): An fmString that specifies the value of the Tag property.

SitePosition (8 bytes): An fmPosition that specifies the value of the Position property.

ControlTipText (variable): An fmString that specifies the value of the Tooltip property.

RuntimeLicKey (variable): An fmString that specifies the value of the RuntimeLicKey property.

ControlSource (variable): An fmString that specifies the value of the ControlSource property.

RowSource (variable): An fmString that specifies the value of the RowSource property.

2.3 Common Text Properties Structure

2.3.1 TextProps

Specifies the values for text-related properties.

Applies to: CheckBox | ComboBox | CommandButton | Label | ListBox | OptionButton | TabStrip | TextBox | ToggleButton

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
MinorVersion								MajorVersion								cbTextProps															

PropMask
DataBlock (variable)
...
ExtraDataBlock (variable)
...

MinorVersion (1 byte): An unsigned integer that specifies the minor version of the control. MUST be set to 0x00.

MajorVersion (1 byte): An unsigned integer that specifies the major version of the control. MUST be set to 0x02.

cbTextProps (2 bytes): An unsigned integer that specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

PropMask (4 bytes): A TextPropsPropMask that specifies which text properties of the control are not set to the file format defaults.

DataBlock (variable): A TextPropsDataBlock that specifies the text properties of the control that are 4 bytes or smaller and are not set to the file format defaults.

ExtraDataBlock (variable): A TextPropsExtraDataBlock that specifies the text properties of the control that are larger than 4 bytes and are not set to the file format defaults.

2.3.2 TextPropsPropMask

Specifies the text properties of the control are not set to the file format default. For each bit, a value of zero specifies that the corresponding property is the file format default and is not stored in the file.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	UnusedBits2																							

A - fFontName (1 bit): Specifies whether the size and compression flag of the FontName property are stored in the **DataBlock.FontName** of the TextProps that contains this **TextPropsPropMask** and the FontName string is stored in the **ExtraDataBlock.FontName** of the TextProps.

B - fFontEffects (1 bit): Specifies whether the FontEffects property is stored in the **DataBlock.FontEffects** of the TextProps that contains this **TextPropsPropMask**.

C - fFontHeight (1 bit): Specifies whether the FontHeight property is stored in the **DataBlock.FontHeight** of the TextProps that contains this **TextPropsPropMask**.

D - UnusedBits1 (1 bit): MUST be set to zero.

E - fFontCharSet (1 bit): Specifies whether the FontCharSet property is stored in the **DataBlock.FontCharSet** of the TextProps that contains this **TextPropsPropMask**.

F - fFontPitchAndFamily (1 bit): Specifies whether the FontPitchAndFamily property is stored in the **DataBlock.FontPitchAndFamily** of the TextProps that contains this **TextPropsPropMask**.

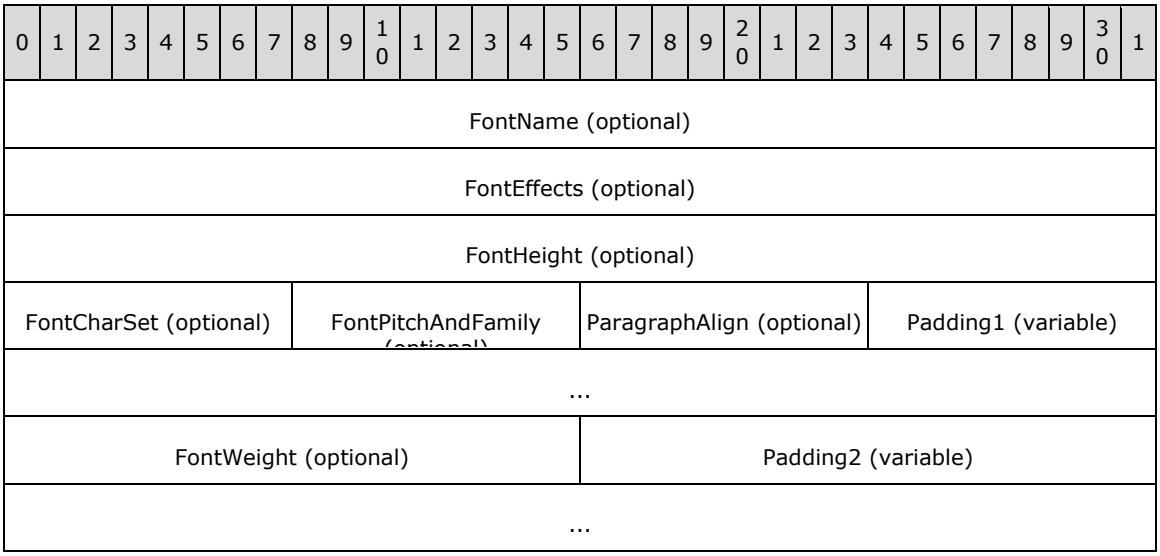
G - fParagraphAlign (1 bit): Specifies whether the ParagraphAlign property is stored in the **DataBlock.ParagraphAlign** of the TextProps that contains this **TextPropsPropMask**.

H - fFontWeight (1 bit): Specifies whether the FontWeight property is stored in the **DataBlock.FontWeight** of the TextProps that contains this **TextPropsPropMask**.

UnusedBits2 (24 bits): MUST be set to zero.

2.3.3 TextPropsDataBlock

Specifies the text properties of the control that are 4 bytes or smaller and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the TextProps that contains this TextPropsDataBlock is set to zero, the property value MUST NOT be stored in the file.



FontName (4 bytes): A CountOfBytesWithCompressionFlag that specifies the size and compression of the FontName property.

FontEffects (4 bytes): An fmFontEffects that specifies the value of the FontEffects property.

FontHeight (4 bytes): An unsigned integer that specifies the value of the FontHeight property.

FontCharSet (1 byte): An unsigned integer that specifies the value of the FontCharSet property.

FontPitchAndFamily (1 byte): An fmFontPitchAndFamily that specifies the value of the FontPitchAndFamily property.

ParagraphAlign (1 byte): A PARAFORMAT_Alignment that specifies the value of the ParagraphAlign property.

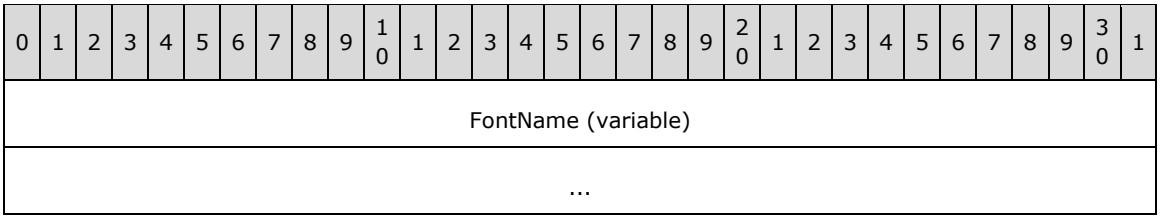
Padding1 (variable): Undefined and MUST be ignored. The size of this field is the least number of bytes required to align the following property, as specified by PaddingAndAlignment.

FontWeight (2 bytes): An unsigned integer that specifies the value of the FontWeight property.

Padding2 (variable): MUST be set to zero. The size of this field is the least number of bytes required to make the total size, in bytes, of this TextPropsDataBlock divisible by 4.

2.3.4 TextPropsExtraDataBlock

Specifies the text properties of the control that are larger than 4 bytes and are not set to the file format defaults. If the corresponding bit in the **PropMask** of the TextProps that contains this **TextPropsExtraDataBlock** is set to zero, the property value MUST NOT be stored in the file.



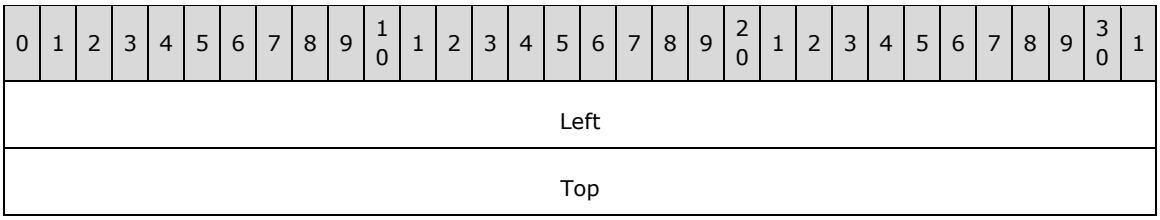
FontName (variable): An fmString that specifies the FontName property. The size and compression of the string is specified by the **DataBlock.FontName** of the TextProps that contains this TextPropsExtraDataBlock.

2.4 Property Types

Specifies data types that are used by more than one control.

2.4.1 fmPosition

Specifies a pair of signed integers that specify a position relative to a reference point.

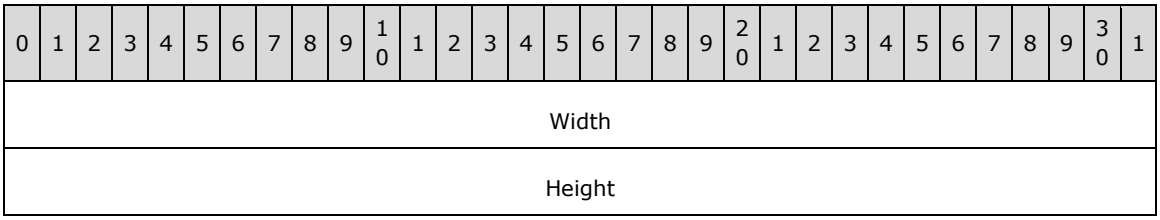


Left (4 bytes): A signed integer that specifies, in **HIMETRIC** units, a distance to the right of the reference point.

Top (4 bytes): A signed integer that specifies, in HIMETRIC units, a distance below the reference point.

2.4.2 fmSize

Specifies a pair of signed integers that specify the size of a control.

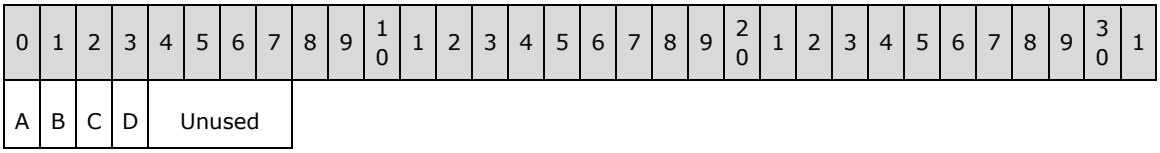


Width (4 bytes): A signed integer that specifies the width, in **HIMETRIC** units, of the control.

Height (4 bytes): A signed integer that specifies the height, in HIMETRIC units, of the control.

2.4.3 FONTFLAGS

Specifies a bit field that specifies style characteristics of a font.



A - FONT_fBold (1 bit): Specifies whether the font style is bold. MUST be set to zero.

B - FONT_fItalic (1 bit): Specifies whether the font style is italic.

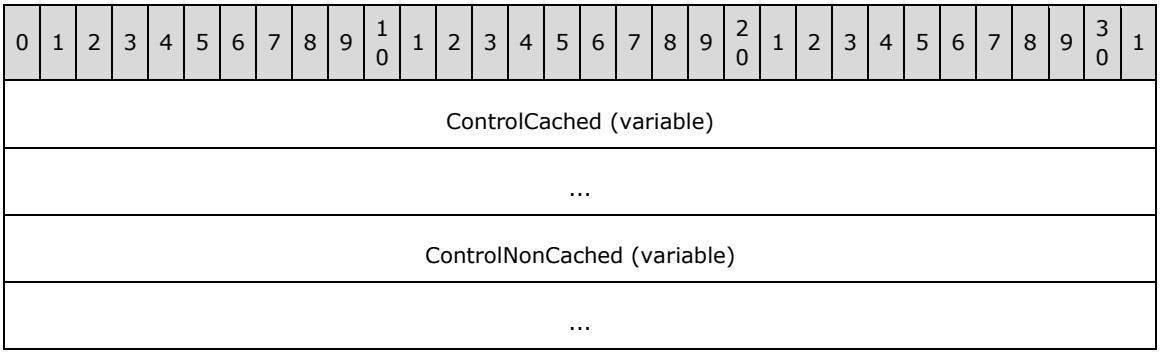
C - FONT_fUnderline (1 bit): Specifies whether the font style is underlined.

D - FONT_fStrikethrough (1 bit): Specifies whether the font style is strikethrough.

Unused (4 bits): MUST be set to zero.

2.4.4 FormEmbeddedActiveXControl

Specifies a control based on the value of a **DataBlock.ClsidCacheIndex** of an OleSiteConcreteControl that is referenced by a FormControl.



ControlCached (variable): A FormEmbeddedActiveXControlCached that is specified by the ClsidCacheIndex property. If the value of the ClsidCacheIndex property is greater than or equal to 0x7FFF, this field MUST NOT be stored.

ControlNonCached (variable): A control that is specified by an index into the **FormSiteData.ClassTable** of the FormControl that references this **FormEmbeddedActiveXControl**. This control MUST be able to interact through OLE Automation, as specified in [MS-OAUT]. If the value of the ClsidCacheIndex property is less than 0x8000, this field MUST NOT be stored.

2.4.5 FormEmbeddedActiveXControlCached

Specifies the type of embedded control for values of the ClsidCacheIndex property less than 0x7FFF. Parent controls are stored as specified in section 2.1.2.2.2. Controls that cannot be parents are stored as specified in section 2.1.2.2.1.

Value	Meaning
7	Form
12	Image

Value	Meaning
14	Frame
15	MorphData
16	SpinButton
17	CommandButton
18	TabStrip
21	Label
23	TextBox
24	ListBox
25	ComboBox
26	CheckBox
27	OptionButton
28	ToggleButton
47	ScrollBar
57	MultiPage

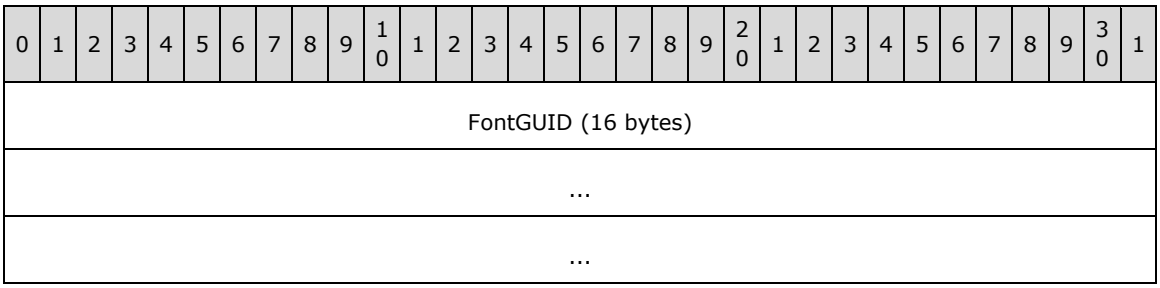
2.4.6 FormFont

Specifies the font type to load based on the **FontGUID** of the **GuidAndFont** that contains this structure. The value of **FontGUID** is stored as specified by [MS-DTYP] section 2.3.4.2, but it is displayed in the following table using Curly Braced GUID String Syntax, as specified by [MS-DTYP] section 2.3.4.3.

Value	Meaning
{0BE35203-8F91-11CE-9DE3-00AA004BB851}	Specifies that the **Font** of the GuidAndFont that contains this **FormFont** is a StdFont.
{AFC20920-DA4E-11CE-B94300AA006887B4}	Specifies that the **Font** of the GuidAndFont that contains this **FormFont** is a TextProps.

2.4.7 GuidAndFont

A **GUID** and a FormFont that specify the StreamData for the Font property.



Font (variable)
...

FontGUID (16 bytes): A GUID, as specified in [MS-DTYP] section 2.3.4, that specifies the type of font that is stored in **Font**. MUST be the GUID of one of the types of FormFont.

Font (variable): A FormFont that specifies a font.

2.4.8 GuidAndPicture

Specifies a combination of a **GUID**, as specified in [MS-DTYP] section 2.3.4, and a StdPicture that specify the **StreamData** for both the MouseIcon and Picture properties.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
CLSID_StdPicture (16 bytes)																															
...																															
...																															
StdPicture (variable)																															
...																															

CLSID_StdPicture (16 bytes): A GUID, as specified in [MS-DTYP] section 2.3.4. MUST be set to {0BE35204-8F91-11CE-9DE3-00AA004BB851}.

StdPicture (variable): A StdPicture that specifies the picture data for either the MouseIcon or Picture property.

2.4.9 OLE_COLOR

Specifies a color.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RgbColorOrPaletteEntry																								OleColorType							

RgbColorOrPaletteEntry (3 bytes): An RgbColorOrPaletteEntry that specifies either the red, green, and blue values of a color or an index into a **color palette**, based on the value of **OleColorType**.

OleColorType (1 byte): An OleColorType that specifies the meaning of **RgbColorOrPaletteEntry**.

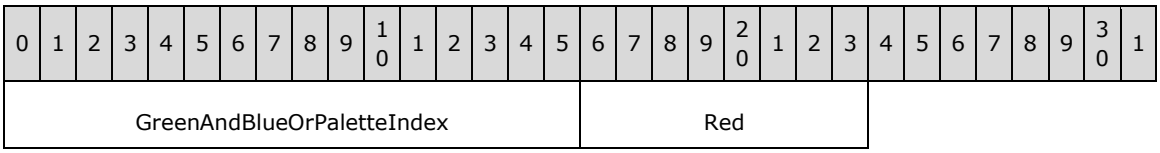
2.4.10 OleColorType

The following table specifies the values of the **OleColorType** enumeration and their meanings with respect to an RgbColorOrPaletteEntry.

Name	Value	Meaning
Default	0x00	Specifies that the client application determines whether the RgbColorOrPaletteEntry is a PaletteEntry, in which case **Red** MUST be set to zero, or an RgbColor, in which case **Red** specifies the red value of a color.
PaletteEntry	0x01	Specifies that the **GreenAndBlueOrPaletteIndex** is an index into a client application **color palette** and that **Red** MUST be set to zero.
RgbColor	0x02	Specifies that **GreenAndBlueOrPaletteIndex** specifies the green and blue values of a color, where the low-order byte specifies blue and the high-order byte specifies green, and that **Red** specifies the red value of a color.
SystemPalette	0x80	Specifies that **GreenAndBlueOrPaletteIndex** is an index into the system color palette and that **Red** MUST be set to zero.

2.4.11 RgbColorOrPaletteEntry

Specifies the red, green, and blue values of a color or an index into a **color palette**, based on the value of an associated OleColorType.

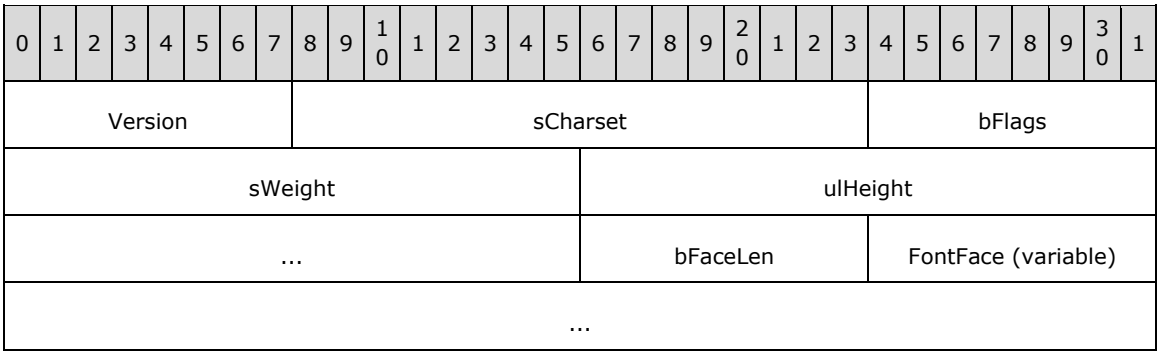


GreenAndBlueOrPaletteIndex (2 bytes): An unsigned integer that specifies the green and blue values of a color or an index into a color palette. If the value of the associated OleColorType is **PaletteEntry** or **SystemPalette**, or if the value is set to **Default** and the client application determines that the color is a **PaletteEntry**, this field is an index into the corresponding color palette. Otherwise, the low-order byte specifies the blue value of a color and the high-order byte specifies the green value of the color.

Red (1 byte): An unsigned integer that specifies the red value of a color. If the value of the associated OleColorType is **PaletteEntry** or **SystemPalette**, or if the value is set to **Default** and the client application determines that the color is a **PaletteEntry**, this field MUST be set to zero.

2.4.12 StdFont

Specifies the format of a standard font structure as persisted to a **stream**.



Version (1 byte): An unsigned integer that specifies the version of **StdFont** that is stored in the file. MUST be set to 1.

sCharset (2 bytes): A signed integer that specifies the **character set** of the font.

bFlags (1 byte): A FONTFLAGS that specifies style characteristics of the font.

sWeight (2 bytes): A signed integer that specifies the weight of the font. MUST be in the range from zero through 1000. A value of zero specifies that the weight is to be determined by the application. A value in the range from 1 through 1000 specifies a weight, where 1 specifies the lightest type and 1000 specifies the darkest type.

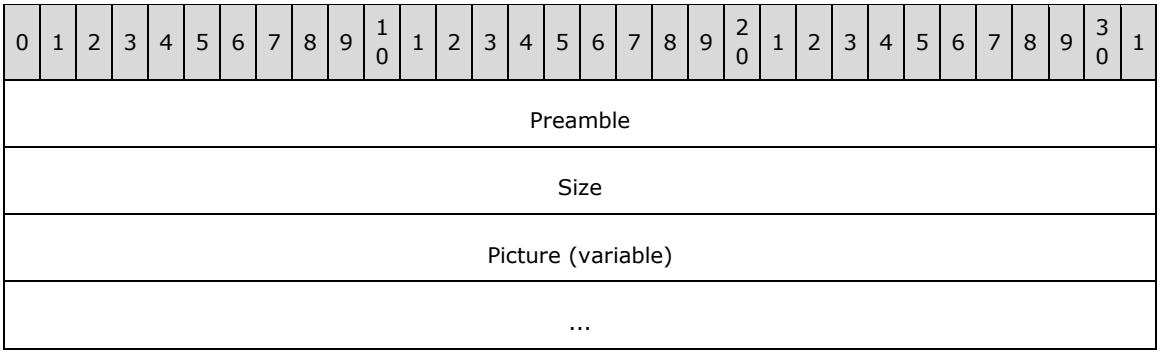
ulHeight (4 bytes): An unsigned integer that specifies the height, in ten-thousandths of a **point**, of the font. MUST be greater than zero and less than or equal to 655350000.

bFaceLen (1 byte): An unsigned integer that specifies the length, in bytes, of **FontFace**. MUST be less than 32.

FontFace (variable): An **ASCII** string that specifies the name of the font.

2.4.13 StdPicture

Specifies a picture as persisted to a **stream**.



Preamble (4 bytes): MUST be set to 0x0000746C.

Size (4 bytes): An unsigned integer that specifies the size, in bytes, of **Picture**.

Picture (variable): A sequence of bytes that specify a picture. The length of the sequence is **Size**. The bytes MUST specify a picture in one of the following formats:

- Bitmap [MS-WMF] section 2.2.2.3
- GIF image [GIF89a]
- JPEG image [JFIF]
- Windows Metafile [MS-WMF]
- Enhanced Metafile [MS-EMF]
- Icon [MC-IcoWin32]

2.4.14 Strings

Properties that are strings are persisted to a **stream** with two structures. All string values are **Unicode** strings, which can be stored compressed or uncompressed.

The first structure specifies the size of the string and whether it is compressed. If the string is stored in an array, the structure MUST be a CountOfCharsWithCompressionFlag; otherwise, the structure MUST be a CountOfBytesWithCompressionFlag.

When the high-order byte of every character in a string is set to 0x00, the string is compressible. Zero-length strings are not compressible. All string property values that are compressible MUST be stored as compressed strings. The compression algorithm removes all bytes that are set to 0x00 from the string. The size of a compressed string is the size after compression.

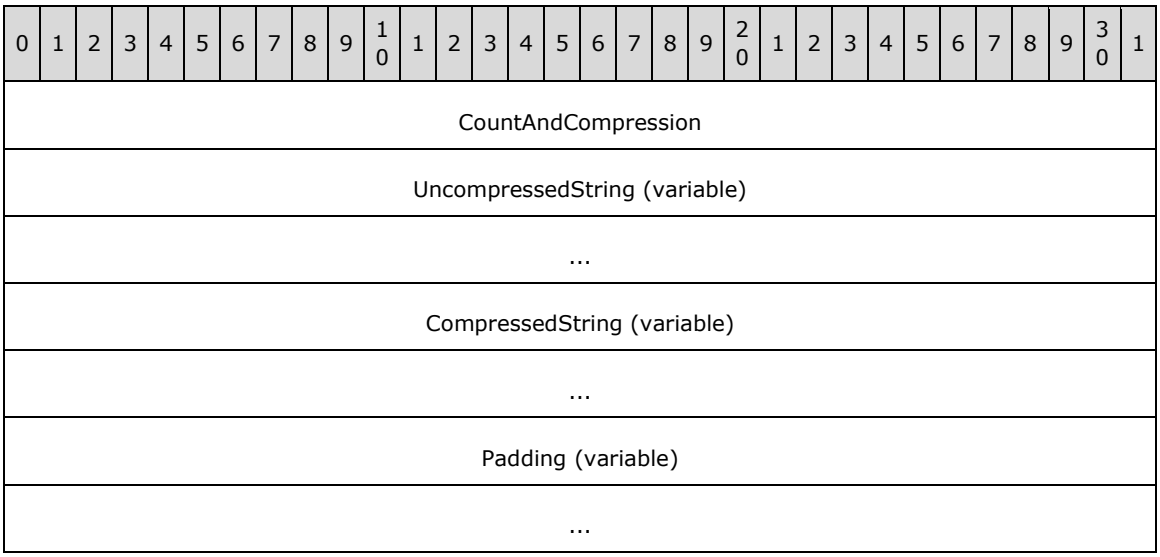
A zero-length string is specified by a CountOfBytesWithCompressionFlag that is set to zero for both **cb** and **fCompressed** or a CountOfCharsWithCompressionFlag that is set to zero for both **cch** and **fCompressed**.

The second structure is an fmString, which stores the characters of the string, after compression if compressible.

Strings MUST NOT store null terminators and MUST NOT count null terminators in the **cb** of the CountOfBytesWithCompressionFlag or the **cch** of the CountOfCharsWithCompressionFlag.

2.4.14.1 ArrayString

Specifies the size, format, and contents of a string that is persisted to a **stream** as part of an array. The CountOfCharsWithCompressionFlag is stored directly preceding the fmString.



CountAndCompression (4 bytes): A CountOfCharsWithCompressionFlag that specifies the size and format of the string that follows.

UncompressedString (variable): An fmString that is not compressed. If the **CountAndCompression.fCompressed** of this **ArrayString** is set to 1 or the **CountAndCompression.cch** of this **ArrayString** is set to zero, this **fmString** MUST NOT be stored.

CompressedString (variable): An fmString that is compressed. If the **CountAndCompression.fCompressed** of this **ArrayString** is set to zero or the **CountAndCompression.cch** of this **ArrayString** is set to zero, this **fmString** MUST NOT be stored.

Padding (variable): Undefined and MUST be ignored. The size of this array is the least number of bytes required to make the total size, in bytes, of this **ArrayString** divisible by 4.

2.4.14.2 CountOfBytesWithCompressionFlag

Specifies the size of an fmString and whether the string is compressed.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
cb																															A

cb (31 bits): An unsigned integer that specifies the size of the string in bytes. The size of a compressed string is the size after compression.

A - fCompressed (1 bit): Specifies whether the string is compressed.

2.4.14.3 CountOfCharsWithCompressionFlag

Specifies the size of an fmString in an array and whether or not the string is compressed.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
cch																															A

cch (31 bits): An unsigned integer that specifies the number of characters in the string.

A - fCompressed (1 bit): Specifies whether the string is compressed.

2.4.14.4 fmString

An array of characters that specifies the value of a **Unicode** string. The size of the string is specified by the **cb** of the CountOfBytesWithCompressionFlag or the **cch** of the CountOfCharsWithCompressionFlag associated with this string. Whether the characters are those of a compressed string is specified by the **fCompressed** of the CountOfBytesWithCompressionFlag or CountOfCharsWithCompressionFlag associated with this **fmString**.

2.5 Property Definitions

This section specifies the properties that can be persisted as part of storing a control, regardless of the type of file to which it is persisted. Each property applies to one or more control types and MUST NOT be persisted with controls to which they do not apply. The value of a property that is not stored is specified to be the file format default of that property. Property values that are the same as the file format default MUST NOT be stored.

In the context of persisting controls to a **property bag**, as specified in section 2.1.1.1, the name of each property is the same as the name of its section, excluding words or phrases in parentheses. The file format defaults are shown in the format used by persisting controls to a **stream**, as specified in section 2.1.1.2, but properties saved to a property bag are still persisted as specified in section 2.1.1.1.

2.5.1 Accelerator

A **Unicode** character that specifies the **accelerator key** for the control.

The file format default is 0x0000, no accelerator.

Applies to: CheckBox | CommandButton | Label | OptionButton | TabStrip | ToggleButton

2.5.2 AutoSize

A **Boolean** value that specifies whether the control automatically resizes to display its entire contents.

The file format default is FALSE.

This property applies only to the Image control. Other controls use the **AutoSize** field of the VariousPropertyBits property.

Applies to: Image

2.5.3 BackColor

An OLE_COLOR that specifies the background color of the control.

The file format default is specified as follows:

Control	File format default	Meaning
CheckBox ComboBox ListBox OptionButton TextBox ToggleButton	0x80000005	COLOR_WINDOW from the **system palette**.
CommandButton Form Image Label ScrollBar SpinButton	0x8000000F	COLOR_BTNFACE from the system palette.
TabStrip	0x8000000F	COLOR_3DFACE from the system palette, equivalent to COLOR_BTNFACE.

Applies to: CheckBox | ComboBox | CommandButton | Form | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

2.5.4 BitFlags (OleSiteConcrete)

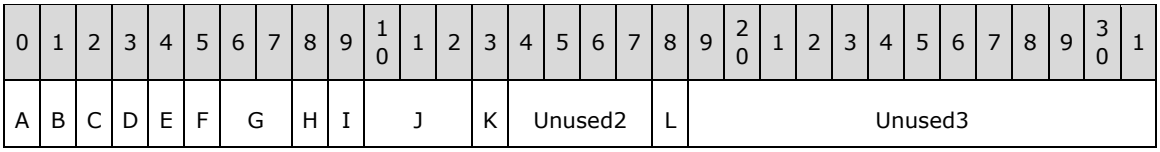
A SITE_FLAG that specifies **Boolean** properties of an embedded control on a form.

The file format default is 0x00000033, which means that the following flags are set to TRUE: **fTabStop**, **fVisible**, **fStreamed**, and **fAutoSize**.

Applies to: OleSiteConcrete

2.5.4.1 SITE_FLAG

Specifies **Boolean** properties of an embedded control on a form. Unless otherwise specified, each bit applies to all control types. All bits that do not apply to a particular type of control MUST be set to zero for that control.



A - fTabStop (1 bit): Specifies whether the control can receive focus while the user is navigating controls using the TAB key.

B - fVisible (1 bit): Specifies whether the control is displayed.

C - fDefault (1 bit): Specifies whether the control is the default option on the form.

D - fCancel (1 bit): Specifies whether the control is the cancel option on the form.

E - fStreamed (1 bit): Specifies whether the control is stored in the Object stream of the form. A value of zero specifies that the control has its own **storage**.

F - fAutoSize (1 bit): Specifies whether the control automatically resizes to display its entire contents.

G - Unused1 (2 bits): MUST be set to zero.

H - fPreserveHeight (1 bit): Specifies whether to preserve the height of a control when resizing. Applies to ListBox.

I - fFitToParent (1 bit): Specifies whether to adjust the size of a control when the size of its parent changes.

J - Reserved1 (3 bits): MUST be set to zero and MUST be ignored.

K - fSelectChild (1 bit): Specifies whether to select the first child of a container control when the container control is the next control to which the user is navigating.

Unused2 (4 bits): MUST be set to zero.

L - fPromoteControls (1 bit): Specifies whether child controls are identified as child objects of the control or as child objects of the parent of the control. MUST be set to 1 for the following controls: Frame, MultiPage and Page. MUST be set to zero for all other controls.

Unused3 (13 bits): MUST be set to zero.

2.5.5 BitFlags (DesignExtender)

A DX_MODE that specifies **Boolean** design-time properties of a UserForm.

The file format default is 0x00015F55, which means that the following flags are set to TRUE:

- **fInheritDesign**
- **fInheritShowToolbox**
- **fInheritShowGrid**
- **fInheritSnapToGrid**
- **fInheritGridX**
- **fInheritGridY**
- **fInheritClickControl**
- **fInheritDblClickControl**
- **fInheritShowInvisible**
- **fInheritShowTooltips**
- **fInheritLayoutImmediate**

Applies to: DesignExtender

2.5.5.1 DX_MODE

Specifies **Boolean** design-time properties of a UserForm.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	Unused													

A - fInheritDesign (1 bit): Specifies whether the form has the same value as the client application design surface settings for **fDesign**.

B - fDesign (1 bit): Specifies whether the form is currently in design mode.

C - fInheritShowToolbox (1 bit): Specifies whether the form has the same value as the client application design-time settings for **fShowToolbox**.

D - fShowToolbox (1 bit): Specifies whether the toolbox is visible.

E - fInheritShowGrid (1 bit): Specifies whether the form has the same value as the client application design-time settings for **fShowGrid**.

F - fShowGrid (1 bit): Specifies whether to display a grid on the design surface of the form.

G - fInheritSnapToGrid (1 bit): Specifies whether the form has the same value as the client application design-time settings for **fSnapToGrid**.

H - fSnapToGrid (1 bit): Specifies whether to keep controls on the form in positions that are on the grid.

I - fInheritGridX (1 bit): Specifies whether the form has the same value as the client application design-time settings for **DataBlock.GridX**.

J - fInheritGridY (1 bit): Specifies whether the form has the same value as the client application design-time settings for **DataBlock.GridY**.

K - fInheritClickControl (1 bit): Specifies whether the form has the same value as the client application design-time settings for **DataBlock.ClickControlMode**.

L - fInheritDblClickControl (1 bit): Specifies whether the form has the same value as the client application design-time settings for **DataBlock.DblClickControlMode**.

M - fInheritShowInvisible (1 bit): Specifies whether the form has the same value as the client application design-time settings for **fShowInvisible**.

N - fShowInvisible (1 bit): Specifies whether to display controls that have been marked as not visible.

O - fInheritShowTooltips (1 bit): Specifies whether the form has the same value as the client application design-time settings for **fShowTooltips**.

P - fShowTooltips (1 bit): Specifies whether to display tooltips for controls on the design surface.

Q - fInheritLayoutImmediate (1 bit): Specifies whether the form has the same value as the client application design-time settings for **fLayoutImmediate**.

R - fLayoutImmediate (1 bit): Specifies whether to update the design surface after a property has changed.

Unused (14 bits): MUST be set to zero.

2.5.6 BooleanProperties

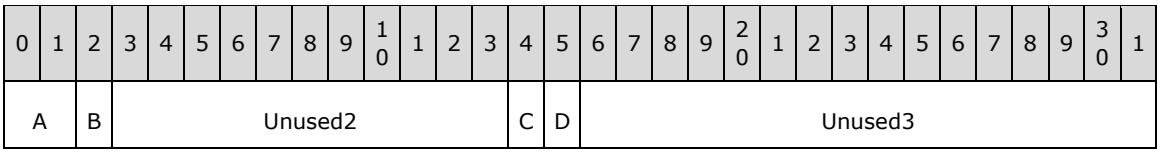
A FormFlags that specifies **Boolean** properties of a form.

The file format default is 0x00000004, FORM_FLAG_ENABLED set to TRUE.

Applies to: Form

2.5.6.1 FormFlags

A bit field that specifies **Boolean** properties of a form.



A - Unused1 (2 bits): MUST be set to zero.

B - FORM_FLAG_ENABLED (1 bit): Specifies whether the form is enabled.

Unused2 (11 bits): MUST be set to zero.

C - FORM_FLAG_DESINKPERSISTED (1 bit): Specifies whether Design Extender properties are persisted with this form.

D - FORM_FLAG_DONTSAVECLASSTABLE (1 bit): Specifies whether the Class Table of a form is *not* persisted. A value of zero specifies that the Class Table is persisted if it is not empty.

Unused3 (16 bits): MUST be set to zero.

2.5.7 BorderColor

An OLE_COLOR that specifies the color of the border of the control.

The file format default is specified in the following table.

Control	File format default	Meaning
ComboBox Image Label ListBox TextBox	0x80000006	COLOR_WINDOWFRAME from the **system palette**.
Form	0x80000012	COLOR_BTNTEXT from the system palette.

Applies to: ComboBox | Form | Image | Label | ListBox | TextBox

2.5.8 BorderStyle

An fmBorderStyle that specifies the type of border used by the control.

The file format default is specified in the following table.

Control	File format default	Meaning
ComboBox Form Label ListBox TextBox	0x00	**fmBorderStyleNone**
Image	0x01	**fmBorderStyleSingle**

Applies to: ComboBox | Form | Image | Label | ListBox | TextBox

2.5.8.1 fmBorderStyle

The following table specifies the values of the **fmBorderStyle** enumeration and their meanings.

Name	Value	Meaning
fmBorderStyleNone	0x00	The control has no visible border line.
fmBorderStyleSingle	0x01	The control has a single-line border.

2.5.9 BoundColumn

An unsigned integer that specifies how the Value property is determined for a ComboBox or ListBox when the MultiSelect property is set to 0x00 (**fmMultiSelectSingle**). The possible values for this property are specified in the following table.

BoundColumn	Meaning
0	Specifies that the value of the Value property is the row number of the selected row. Rows are numbered starting from zero.
1 or greater	Specifies the number of the column in the selected row whose data is the value of the Value property. Columns are numbered starting from 1.

When the MultiSelect property is not set to 0x00 (**fmMultiSelectSingle**), **BoundColumn** has no effect on the Value property.

The file format default is 0x0001.

Applies to: ComboBox | ListBox

2.5.10 Caption

An fmString that specifies the descriptive text that appears on a control to identify or describe it.

The file format default is a zero-length string.

Applies to: CheckBox | CommandButton | Form<2> | Label | OptionButton | TabStrip | ToggleButton

2.5.11 cColumnInfo

An unsigned integer that specifies the last column with a non-default width. Columns are counted starting at 1. A value of zero specifies that all columns have the default width.

The file format default is 0x0000.

Applies to: ComboBox | ListBox

2.5.12 ClickControlMode

An fmClickControlMode that specifies control behavior when the control is clicked.

The file format default is 0x00, **fmClickControlModeInsertionPoint**.

Applies to: DesignExtender

2.5.12.1 fmClickControlMode

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmClickControlModeInherit	0xFE	Use the same value as the client application design-time settings.
fmClickControlModeDefault	0xFF	Use the client application default value.
fmClickControlModeInsertionPoint	0x00	Select the control under the cursor, and set the insertion point under the cursor, both on the same click.
fmClickControlModeSelectThenInsert	0x01	If the control under the cursor is already selected, set the insertion point under the cursor; otherwise, select the control.

2.5.13 ClsidCacheIndex

An unsigned integer that specifies the type of a FormEmbeddedActiveXControl on a parent control. A value less than 0x7FFF specifies an index value for FormEmbeddedActiveXControlCached. A value of 0x7FFF specifies that the index is invalid. A value greater than or equal to 0x8000 specifies an index into the **FormSiteData.ClassTable** of the FormControl in which the control is embedded, where information about the control is specified by the entry in **ClassTable** that corresponds to the value of this property minus 0x8000.

The file format default is 0x7FFF, an invalid index.

Applies to: OleSiteConcrete

2.5.14 ColumnCount

A signed integer that specifies the number of columns to display in a ComboBox or ListBox. A value of −1 specifies that all columns are to be displayed. MUST be in the range from −1 through 32767.

The file format default is 0x0001.

Applies to: ComboBox | ListBox

2.5.15 ControlSource

An fmString that specifies a **cell** in a **worksheet** that sets the Value property of a control when the control is loaded and to which the new value of the Value property is stored after it changes in the control.

The file format default is a zero-length string.

Applies to: OleSiteConcrete

2.5.16 Cycle

An fmCycle that specifies the behavior of the TAB key in the last control of a form.

The file format default is 0x00, **fmCycleAllForms**.

Applies to: Form

2.5.16.1 fmCycle

The following table specifies the values of the **fmCycle** enumeration and their meanings.

Name	Value	Meaning
fmCycleAllForms	0x00	The focus is next set to the first control on the next form, returning to the first control of this form only after all controls on all other forms have been reached.
fmCycleCurrentForm	0x02	The focus is next set to the first control on this form, ignoring other forms.

2.5.17 Delay

An unsigned integer that specifies the delay, in milliseconds, between successive scroll or value-change events when a user clicks and holds down a button on a ScrollBar or SpinButton.

The file format default is 0x00000032, 50 milliseconds.

Applies to: ScrollBar | SpinButton

2.5.18 DblClickControlMode

An fmDblClickControlMode that specifies the behavior when the user double-clicks a form or an item on the form.

The file format default is 0x00, **fmDblClickControlModeSelectText**.

Applies to: DesignExtender

2.5.18.1 fmDblClickControlMode

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmDblClickControlModeInherit	0xFE	Use the same value as the client application design-time settings.
fmDblClickControlModeSelectText	0x00	Select any text that is under the cursor.
fmDblClickControlModeEditCode	0x01	Display and set focus to the code associated with the control that is under the cursor.
fmDblClickControlModeEditProperties	0x02	Display the properties of the control that is under the cursor.

2.5.19 DisplayedSize

An fmSize that specifies the physical size, in **HIMETRIC** units, of a displayed form. Controls can exist on the form outside of this size.<3>

The file format default is a width of 4000, 113.4 **points**, and a height of 3000, 85 points.

Applies to: Form

2.5.20 DisplayStyle

An fmDisplayStyle that specifies the type of a MorphDataControl.

The file format default is 0x01, **fmDisplayStyleText**.

Applies to: CheckBox | ComboBox | ListBox | OptionButton | TextBox | ToggleButton

2.5.20.1 fmDisplayStyle

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmDisplayStyleText	0x01	A TextBox control.
fmDisplayStyleList	0x02	A ListBox control.
fmDisplayStyleCombo	0x03	A ComboBox control in which the TextBox part is directly editable.<4>
fmDisplayStyleCheckBox	0x04	A CheckBox control.
fmDisplayStyleOptionButton	0x05	An OptionButton control.
fmDisplayStyleToggle	0x06	A ToggleButton control.
fmDisplayStyleDropList	0x07	A ComboBox control in which the TextBox part is not editable except by selecting a different value from the ListBox part.<5>

2.5.21 DrawBuffer

An unsigned integer that specifies the number of pixels in a buffer into which the form can be drawn. MUST be in the range from 16000 through 1048576.

Each Form MUST persist a value for this property.

Applies to: Form

2.5.22 DropButtonStyle

An fmDropButtonStyle that specifies the symbol displayed on the drop button in a ComboBox. SHOULD be set to 0x01 (**fmDropButtonStyleArrow**) for TextBox controls.<6>

The file format default is 0x01, **fmDropButtonStyleArrow**.

Applies to: ComboBox | TextBox

2.5.22.1 fmDropButtonStyle

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmDropButtonStylePlain	0x00	Displays a button with no symbol.
fmDropButtonStyleArrow	0x01	Displays a button with a down arrow.
fmDropButtonStyleEllipsis	0x02	Displays a button with an ellipsis (...).
fmDropButtonStyleReduce	0x03	Displays a button with a horizontal line like an underscore character.

2.5.23 Flags

A **Boolean** value that specifies whether the control is enabled.

The file format default is TRUE, control is enabled.

Applies to: MultiPage

2.5.24 Font

A GuidAndFont that specifies the font to use in a control.

The file format default is not to store a font.

Applies to: Form

2.5.25 FontCharSet

An unsigned integer that specifies the **character set** of the text displayed by the control that contains the TextProps to which this property applies.

The file format default is 0x01.

Applies to: TextProps

2.5.26 FontEffects

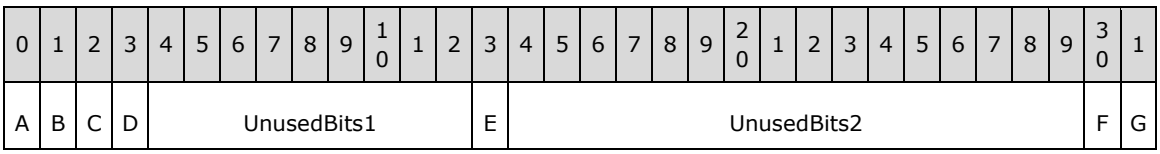
An fmFontEffects that specifies the visual attributes of the text displayed by the control that contains the TextProps to which this property applies.

The file format default is 0x00000000, no effects set.

Applies to: TextProps

2.5.26.1 fmFontEffects

Specifies the possible values of the FontEffects property.



A - fBold (1 bit): Specifies whether the Bold effect has been applied to the font.

B - fItalic (1 bit): Specifies whether the Italic effect has been applied to the font.

C - fUnderline (1 bit): Specifies whether the Underline effect has been applied to the font.

D - fStrikeout (1 bit): Specifies whether the Strikeout effect has been applied to the font.

UnusedBits1 (9 bits): MUST be set to zero.

E - fDisabled (1 bit): Specifies whether the Disabled effect has been applied to the font.

UnusedBits2 (16 bits): MUST be set to zero.

F - fAutoColor (1 bit): Specifies whether the AutoColor effect has been applied to the font.

G - UnusedBits3 (1 bit): MUST be set to zero.

2.5.27 FontHeight

An unsigned integer that specifies the height, in **twips**, of the text displayed by the control that contains the TextProps to which this property applies. MUST be less than or equal to 4294967.

The file format default is 160, an 8-**point** font.

Applies to: TextProps

2.5.28 FontName

An fmString that specifies the font of the text displayed by the control that contains the TextProps to which this property applies.

The file format default is MS Sans Serif.

Applies to: TextProps

2.5.29 FontPitchAndFamily

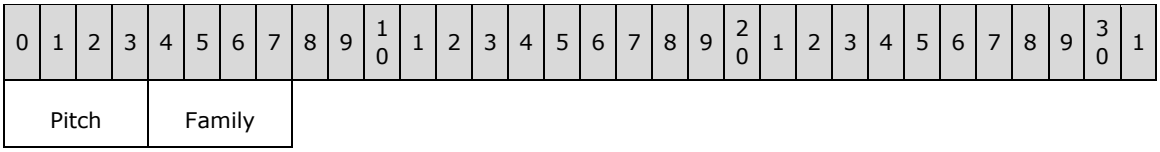
An fmFontPitchAndFamily that specifies the **character pitch** and the **font family** of the text displayed by the control that contains the TextProps to which this property applies.

The file format default is 0x00, DEFAULT_PITCH, FF_DONTCARE.

Applies to: TextProps

2.5.29.1 fmFontPitchAndFamily

An unsigned integer specifying **character pitch** and **font family**. The four low-order bits specify the character pitch of a font, and the four high-order bits specify the font family.



Pitch (4 bits): Specifies the character pitch of a font. MUST be a value specified in fmFontPitch.

Family (4 bits): Specifies the font family of a font. MUST be a value specified in fmFontFamily.

2.5.29.2 fmFontPitch

The following table specifies the values of the **fmFontPitch** enumeration and their meanings.

Name	Value	Meaning
DEFAULT_PITCH	0x0	Does not specify a **character pitch**. Behavior is determined by the client application using this field.
FIXED_PITCH	0x1	All characters have the same width.
VARIABLE_PITCH	0x2	Characters have varying widths.

2.5.29.3 fmFontFamily

The following table specifies the values of the **fmFontFamily** enumeration and their meanings.

Name	Value	Meaning
FF_DONTCARE	0x0	Specifies that the default font is used.
FF_ROMAN	0x1	Specifies that fonts with variable stroke width (proportional) and with serifs are used.
FF_SWISS	0x2	Specifies that fonts with variable stroke width (proportional) and without serifs are used.
FF_MODERN	0x3	Specifies that fonts with constant stroke width (monospace), with or without serifs are used.
FF_SCRIPT	0x4	Specifies that fonts designed to look like handwriting are used.
FF_DECORATIVE	0x5	Specifies that novelty fonts are used.

2.5.30 FontWeight

An unsigned integer that specifies the font weight of the text displayed by the control that contains the TextProps to which this property applies. The value MUST be in the range from zero through 1000. A value of zero specifies that the weight is determined by the application. A value from 1 through 1000 specifies a weight, where 1 specifies the lightest type and 1000 specifies the darkest type.

The file format default is 400.

Applies to: TextProps

2.5.31 ForeColor

An OLE_COLOR that specifies the foreground color of the control.

The file format default is specified in the following table.

Control	File format default	Meaning
CheckBox ComboBox ListBox OptionButton TextBox ToggleButton	0x80000008	COLOR_WINDOWTEXT from the **system palette**

Control	File format default	Meaning
CommandButton Form Label ScrollBar SpinButton TabStrip	0x80000012	COLOR_BTNTEXT from the system palette

Applies to: CheckBox | ComboBox | CommandButton | Form | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

2.5.32 GridX

A signed integer that specifies the horizontal distance, in **HIMETRIC** units, between points on the design surface grid. A value of zero specifies that no grid is displayed. If this value for a control is set to zero, GridY MUST also be set to zero for that control.

The file format default is 0x00000000.

Applies to: DesignExtender

2.5.33 GridY

A signed integer that specifies the vertical distance, in **HIMETRIC** units, between points on the design surface grid. A value of zero specifies that no grid is displayed. If this value for a control is set to zero, GridX MUST also be set to zero for that control.

The file format default is 0x00000000.

Applies to: DesignExtender

2.5.34 GroupCount

An unsigned integer that specifies the number of control groups on a form.

The file format default is zero.

Applies to: Form

2.5.35 GroupID

An unsigned integer that specifies the control group of a control. A value of zero specifies that the control is not in a control group. A value greater than zero specifies the unique identifier of the control group to which the control belongs. All controls that have the same value for this property are in the same control group.

The file format default is 0x0000.

Applies to: OleSiteConcrete

2.5.36 GroupName

An fmString that specifies a group of mutually exclusive controls.

The file format default is a zero-length string.

Applies to: CheckBox | OptionButton

2.5.37 HelpContextID

A signed integer that specifies a context that can be used to direct Help to a specific category or article for an embedded control on a form.

The file format default is 0x00000000.

Applies to: OleSiteConcrete

2.5.38 ID

A signed integer that specifies a unique identifier for an embedded control on a form.

The file format default is 0x00000000.

Applies to: MultiPage | OleSiteConcrete

2.5.39 LargeChange

A signed integer that specifies the amount by which the Position property changes when the user clicks between the scroll box and scroll arrow.

The file format default is 0x00000001.

Applies to: ScrollBar

2.5.40 ListIndex

A signed integer that specifies the index of the selected tab, where zero is the first tab. The value MUST be less than the number of items in the control.

The file format default is 0xFFFFFFFF, –1, which specifies that no tab is selected.

Applies to: TabStrip

2.5.41 ListRows

An unsigned integer that specifies the maximum number of rows to display in the list.

The file format default is 0x0008.

Applies to: ComboBox

2.5.42 ListStyle

An **fmListStyle** that specifies the visual appearance of the list in a ListBox or ComboBox.

The file format default is 0x00, fmListStylePlain.

Applies to: ComboBox | ListBox

2.5.42.1 fmListStyle

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmListStylePlain	0x00	Displays a list in which the background of an item is highlighted when it is selected.
fmListStyleOption	0x01	Displays a list in which an option button (when the MultiSelect property is set to **fmMultiSelectSingle**) or a checkbox (when the MultiSelect property is **fmMultiSelectMulti** or **fmMultiSelectExtended**) next to each entry displays the selection state of that item.

2.5.43 ListWidth

An unsigned integer that specifies the width, in HIMETRIC units, of the ListBox part of a ComboBox control. The value SHOULD be set to zero for ListBox controls. A value of zero specifies that the ListBox part is the same width as the TextBox part.<7>

The file format default is 0x00, matches the TextBox part.

Applies to: ComboBox | ListBox

2.5.44 LogicalSize

An fmSize that specifies the full scrollable size, in **HIMETRIC** units, of a form, including all controls. A value of zero in either width or height specifies that the scrollable size is equivalent to the value of the corresponding portion of DisplayedSize.

The file format default is a width of 4000, 113.4 **points** and a height of 3000, 85 points.

Applies to: Form

2.5.45 MatchEntry

An fmMatchEntry that specifies how a ListBox or ComboBox searches its list as the user types.

The file format default is 0x02, **fmMatchEntryNone**.

Applies to: ComboBox | ListBox

2.5.45.1 fmMatchEntry

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmMatchEntryFirstLetter	0x00	The control searches for the next entry that starts with the character entered. Repeatedly typing the same letter cycles through all entries beginning with that letter.
fmMatchEntryComplete	0x01	As each character is typed, the control searches for an entry matching all characters entered.
fmMatchEntryNone	0x02	The list is not searched when characters are typed.

2.5.46 Max

A signed integer that specifies the maximum acceptable value for the Position property of a ScrollBar or SpinButton.

The file format default is specified in the following table.

Control	File format default
ScrollBar	0x00007FFF (32767)
SpinButton	0x00000064 (100)

Applies to: ScrollBar | SpinButton

2.5.47 MaxLength

An unsigned integer that specifies the maximum number of characters that a user can enter in a TextBox or ComboBox. A value of zero specifies no limit.

The file format default is 0x00000000, no limit.

Applies to: ComboBox | TextBox

2.5.48 Min

A signed integer that specifies the minimum acceptable value for the Position property of a ScrollBar or SpinButton.

The file format default is 0x00000000.

Applies to: ScrollBar | SpinButton

2.5.49 MouseIcon

A GuidAndPicture that specifies a custom icon to display as the mouse pointer for the control, which is used when the value of the MousePointer property is set to 99, **fmMousePointerCustom**.

The file format default is no custom icon.

Applies to: CheckBox | ComboBox | CommandButton | Form | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

2.5.50 MousePointer

An unsigned integer that specifies the type of icon displayed as the mouse pointer for the control. SHOULD be a value from the fmMousePointer enumeration.<8>

The file format default is 0x00, **fmMousePointerDefault**.

Applies to: CheckBox | ComboBox | CommandButton | Form | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

2.5.50.1 fmMousePointer

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmMousePointerDefault	0x00	Standard pointer.
fmMousePointerArrow	0x01	Arrow.
fmMousePointerCross	0x02	Cross-hair pointer.

Name	Value	Meaning
fmMousePointerIBeam	0x03	I-beam.
fmMousePointerSizeNESW	0x06	Double arrow pointing northeast and southwest.
fmMousePointerSizeNS	0x07	Double arrow pointing north and south.
fmMousePointerSizeNWSE	0x08	Double arrow pointing northwest and southeast.
fmMousePointerSizeWE	0x09	Double arrow pointing west and east.
fmMousePointerUpArrow	0x0A	Up arrow.
fmMousePointerHourGlass	0x0B	Hourglass.
fmMousePointerNoDrop	0x0C	"Not" symbol (circle with a diagonal line) on top of the object being dragged.
fmMousePointerAppStarting	0x0D	Arrow with an hourglass.
fmMousePointerHelp	0x0E	Arrow with a question mark.
fmMousePointerSizeAll	0x0F	"Size-all" cursor (arrows pointing north, south, east, and west).
fmMousePointerCustom	0x63	Uses the icon specified by the MouseIcon property.

2.5.51 MultiRow

A **Boolean** value that specifies whether the tabs of a control can be displayed in more than one row.

The file format default is FALSE, display tabs in one row.

Applies to: TabStrip

2.5.52 MultiSelect

An fmMultiSelect that specifies whether the control permits multiple selections. SHOULD be set to 0x00 (**fmMultiSelectSingle**) for CheckBox, OptionButton, and ToggleButton controls.<9>

The file format default is 0x00, **fmMultiSelectSingle**.

Applies to: CheckBox | ListBox | OptionButton | ToggleButton

2.5.52.1 fmMultiSelect

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmMultiSelectSingle	0x00	Only one item can be selected.
fmMultiSelectMulti	0x01	Pressing the SPACEBAR or clicking selects or deselects an item in the list.
fmMultiSelectExtended	0x02	Pressing SHIFT and clicking the mouse, or pressing SHIFT and one of the arrow keys, extends the selection from the previously selected item to the current item. Pressing CTRL and clicking the mouse selects or deselects an item.

2.5.53 Name

An fmString that specifies the name of a control.

The file format default is a zero-length string.

Applies to: OleSiteConcrete | TabStrip

2.5.54 NewVersion

A **Boolean** value that specifies whether the control is persisted with a TextProps.

The file format default is FALSE. TabStrip controls MUST specify a value of TRUE for this property.

Applies to: TabStrip

2.5.55 NextAvailableID

An unsigned integer that specifies the largest ID that has been used by an embedded control on a form. The value of this property can be used by the client application to determine the next valid ID for a new control.

The file format default is 0x00000000.

Applies to: Form

2.5.56 NextEnabled

An unsigned integer that specifies whether a control is enabled, that is, whether it can receive the focus and respond to user-generated events. The value of this property MUST be equal to the value of PrevEnabled.

The file format default is 0x00000001, the control is enabled.

Applies to: ScrollBar | SpinButton.

2.5.57 ObjectStreamSize

An unsigned integer that specifies the size, in bytes, of an embedded control that is persisted to the Object stream of a Form.

The file format default is 0x00000000.

Applies to: OleSiteConcrete

2.5.58 Orientation

An **fmOrientation** that specifies whether the SpinButton or ScrollBar is oriented vertically or horizontally.

The file format default is 0xFFFFFFFF, fmOrientationAuto.

Applies to: ScrollBar | SpinButton

2.5.58.1 fmOrientation

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmOrientationAuto	0xFFFFFFFF	Control is rendered horizontally when the width of the control is greater than its height. The control is rendered vertically otherwise.
fmOrientationVertical	0x00000000	Control is rendered vertically.
fmOrientationHorizontal	0x00000001	Control is rendered horizontally.

2.5.59 PageCount

A signed integer that specifies the number of Pages in a control. A value less than zero specifies an invalid number of Pages.

The MultiPage control to which this property applies MUST **persist** this property.

Applies to: MultiPage

2.5.60 ParagraphAlign

A PARAFORMAT_Alignment that specifies the horizontal justification of the text used by the control.

The file format default is 0x01, PFA_LEFT.

Applies to: TextProps

2.5.60.1 PARAFORMAT_Alignment

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
PFA_LEFT	0x01	The text used by the control is aligned to the left.
PFA_RIGHT	0x02	The text used by the control is aligned to the right.
PFA_CENTER	0x03	The text used by the control is aligned to the center.

2.5.61 PasswordChar

A **Unicode** character that specifies a character to be displayed in place of the characters entered in a TextBox. The null character specifies that the control displays the characters that the user types.

The file format default is 0x0000, display the characters the user types.

Applies to: TextBox

2.5.62 Picture

A GuidAndPicture that specifies the picture to display on a control.

The file format default is no picture.

Applies to: CheckBox | CommandButton | Form | Image | Label | OptionButton | ToggleButton

2.5.63 PictureAlignment

An fmPictureAlignment that specifies the alignment of the picture in the Form or Image.

The file format default is 0x02, **fmPictureAlignmentCenter**.

Applies to: Form | Image

2.5.63.1 fmPictureAlignment

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmPictureAlignmentTopLeft	0x00	The top-left corner.
fmPictureAlignmentTopRight	0x01	The top-right corner.
fmPictureAlignmentCenter	0x02	The center.
fmPictureAlignmentBottomLeft	0x03	The bottom-left corner.
fmPictureAlignmentBottomRight	0x04	The bottom-right corner.

2.5.64 PicturePosition

An fmPicturePosition that specifies the location of the picture of a control relative to the caption of the control.

The file format default is 0x00070001, **fmPicturePositionAboveCenter**.

Applies to: CheckBox | CommandButton | Label | OptionButton | ToggleButton

2.5.64.1 fmPicturePosition

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmPicturePositionLeftTop	0x00020000	The picture appears to the left of the caption. The caption is aligned with the top of the picture.
fmPicturePositionLeftCenter	0x00050003	The picture appears to the left of the caption. The caption is centered relative to the picture.
fmPicturePositionLeftBottom	0x00080006	The picture appears to the left of the caption. The caption is aligned with the bottom of the picture.
fmPicturePositionRightTop	0x00000002	The picture appears to the right of the caption. The caption is aligned with the top of the picture.
fmPicturePositionRightCenter	0x00030005	The picture appears to the right of the caption. The caption is centered relative to the picture.
fmPicturePositionRightBottom	0x00060008	The picture appears to the right of the caption. The caption is aligned with the bottom of the picture.
fmPicturePositionAboveLeft	0x00060000	The picture appears above the caption. The caption is aligned with the left edge of the picture.

Name	Value	Meaning
fmPicturePositionAboveCenter	0x00070001	The picture appears above the caption. The caption is centered below the picture.
fmPicturePositionAboveRight	0x00080002	The picture appears above the caption. The caption is aligned with the right edge of the picture.
fmPicturePositionBelowLeft	0x00000006	The picture appears below the caption. The caption is aligned with the left edge of the picture.
fmPicturePositionBelowCenter	0x00010007	The picture appears below the caption. The caption is centered above the picture.
fmPicturePositionBelowRight	0x00020008	The picture appears below the caption. The caption is aligned with the right edge of the picture.
fmPicturePositionCenter	0x00040004	The picture appears in the center of the control. The caption is centered horizontally and vertically above the picture.

2.5.65 PictureSizeMode

An fmPictureSizeMode that specifies how to display the picture.

The file format default is 0x00, **fmPictureSizeModeClip**.

Applies to: Form | Image

2.5.65.1 fmPictureSizeMode

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmPictureSizeModeClip	0x00	Crops any part of the picture that is larger than the control boundaries.
fmPictureSizeModeStretch	0x01	Stretches the picture to fill the control area. This setting distorts the picture in either the horizontal or vertical direction.
fmPictureSizeModeZoom	0x03	Enlarges the picture, but does not distort the picture in either the horizontal or vertical direction.

2.5.66 PictureTiling

A **Boolean** value that specifies whether the picture is tiled across the background.

The file format default is FALSE.

Applies to: Form | Image

2.5.67 Position (ScrollBar and SpinButton)

A signed integer that specifies the value of a ScrollBar or SpinButton control.<10> MUST be greater than or equal to the smaller of Min and Max, and MUST be less than or equal to the greater of Min and Max.

The file format default is 0x00000000.

Applies to: ScrollBar | SpinButton

2.5.68 Position (OleSiteConcrete)

An fmPosition that specifies the location of the top-left corner of an embedded control on a form, relative to the top-left corner of the LogicalSize of the form.

The file format default is (0, 0), which specifies that the top-left corner of the embedded control is at the top-left corner of the form.

Applies to: OleSiteConcrete

2.5.69 PrevEnabled

An unsigned integer that specifies whether a control is enabled, that is, whether it can receive the focus and respond to user-generated events. A value of zero specifies that the control is not enabled. A value of 1 specifies that the control is enabled. If the control **persists** a value for the VariousPropertyBits property and the value of **VariousPropertiesBitfield.Enabled** is set to zero, the value of this property MUST be set to zero.

The file format default is 0x00000001, the control is enabled.

Applies to: ScrollBar | SpinButton.

2.5.70 ProportionalThumb

A signed integer that specifies the size of the scroll box. MUST be set to either 0xFFFF or 0x0000. A value of 0xFFFF specifies that the scroll box is proportional in size to the scrolling region. A value of 0x0000 specifies that the size of the scroll box is fixed.

The file format default is 0xFFFF, scroll box proportionally sized.

Applies to: ScrollBar

2.5.71 RowSource

An fmString that specifies the source for the list of values in a ComboBox or ListBox that is embedded in a form. This property MUST NOT be set for other controls. The format of the string is a **range** of **cells** in a **worksheet**.

The file format default is a zero-length string.

Applies to: OleSiteConcrete

2.5.72 RuntimeLicKey

An fmString that specifies the **license key** of a control.

The file format default is a zero-length string.

Applies to: OleSiteConcrete

2.5.73 ScrollBars (UserForm)

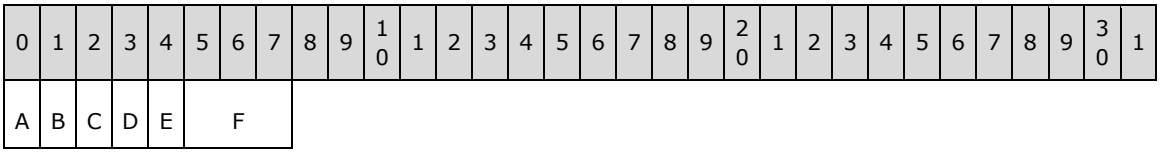
A FormScrollBarFlags that specifies whether a form has vertical or horizontal scroll bars and when to display them.

The file format default is 0x0000000C, **fScrollBarsKeepHorizontal** and **fScrollBarsKeepVertical**.

Applies to: Form

2.5.73.1 FormScrollBarFlags

A bit field that specifies the location of the scroll bars of a form.



A - fScrollBarsHorizontal (1 bit): Specifies whether the horizontal scroll bar is displayed.

B - fScrollBarsVertical (1 bit): Specifies whether the vertical scroll bar is displayed.

C - fScrollBarsKeepHorizontal (1 bit): Specifies whether to display the horizontal scroll bar at all times, even when all controls are visible without scrolling.

D - fScrollBarsKeepVertical (1 bit): Specifies whether to display the vertical scroll bar at all times, even when all controls are visible without scrolling.

E - fScrollBarsKeepLeft (1 bit): Specifies whether to display the vertical scroll bar on the left side of the form.

F - Unused (3 bits): MUST be set to zero.

2.5.74 ScrollBars (MorphData)

An fmScrollBars that specifies whether the control has vertical scroll bars, horizontal scroll bars, both, or neither. MUST be set to 0x03 (**fmScrollBarsBoth**) for ListBox controls.

The file format default is 0x00, **fmScrollBarsNone**.

Applies to: ListBox | TextBox

2.5.74.1 fmScrollBars

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmScrollBarsNone	0x00	Displays no scroll bars.
fmScrollBarsHorizontal	0x01	Displays a horizontal scroll bar.
fmScrollBarsVertical	0x02	Displays a vertical scroll bar.
fmScrollBarsBoth	0x03	Displays both a horizontal and a vertical scroll bar.

2.5.75 ScrollPosition

An fmPosition that specifies, in **HIMETRIC** units, the coordinates of the first point in the LogicalSize of the form that is visible.

The file format default is a position of (0, 0), which specifies that the form has not been scrolled.

Applies to: Form

2.5.76 ShapeCookie

An unsigned integer that specifies the number of times the dynamic **type information** of a form has changed. The value of this property can be used to determine whether a form being loaded still matches the dynamic type information against which it was compiled.

The file format default is 0x00000000.

Applies to: Form

2.5.77 ShowDropButtonWhen

An fmShowDropButtonWhen that specifies when to show the drop button for a ComboBox.

The file format default is 0x00, **fmShowDropButtonWhenNever**.

Applies to: ComboBox | TextBox

2.5.77.1 fmShowDropButtonWhen

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmShowDropButtonWhenNever	0x00	Never show the drop button.
fmShowDropButtonWhenFocus	0x01	Show the drop button when the control has the focus.
fmShowDropButtonWhenAlways	0x02	Show the drop button at all times.

2.5.78 Size

An fmSize that specifies width and height, in **HIMETRIC** units, of the control.

Each control to which this property applies MUST **persist** a value for it.

Applies to: CheckBox | ComboBox | CommandButton | Image | Label | ListBox | OptionButton | TabStrip | TextBox | ToggleButton

2.5.79 SmallChange

A signed integer that specifies the amount by which the Position property changes when the user clicks either scroll arrow in a ScrollBar or SpinButton.

The file format default is 0x00000001.

Applies to: ScrollBar | SpinButton

2.5.80 SpecialEffect

An fmSpecialEffect that specifies the visual appearance of the control. MUST be set to 0x02 for ToggleButton controls.

The file format default is specified in the following table.

Control	File format default	Meaning
CheckBox ComboBox ListBox OptionButton TextBox ToggleButton	0x02	fmSpecialEffectSunken
Form Label Image	0x00	fmSpecialEffectFlat

Applies to: CheckBox | ComboBox | Form | Image | Label | ListBox | OptionButton | TextBox | ToggleButton

2.5.80.1 fmSpecialEffect

The following table specifies the values of this enumeration and their meanings. In this enumeration, "form" refers to the surface on which the control appears.

Name	Value	Meaning
fmSpecialEffectFlat	0x00	Control appears flat.
fmSpecialEffectRaised	0x01	Control appears to be raised up from the form.
fmSpecialEffectSunken	0x02	Control appears to be carved into the form.
fmSpecialEffectEtched	0x03	The control border appears to be carved into the form.
fmSpecialEffectBump	0x06	The control border appears to be raised up from the form.

2.5.81 TabData

An unsigned integer that specifies the number of tabs in a control for which a TabStripTabFlag is stored. MUST be less than or equal to the number of tabs in the control.

The file format default is 0x00000000.

Applies to: TabStrip

2.5.82 TabFixedHeight

An unsigned integer that specifies the height, in **HIMETRIC** units, of each tab in a TabStrip. The value applies to all tabs and MUST be less than or equal to 254000.<11>

The file format default is 0x00000000, which specifies that the client application determines the height.

Applies to: TabStrip

2.5.83 TabFixedWidth

An unsigned integer that specifies the width, in **HIMETRIC** units, of each tab in a TabStrip. The value applies to all tabs and MUST be less than or equal to 254000. <12>

The file format default is 0x00000000, which specifies that the client application determines the width.

Applies to: TabStrip

2.5.84 TabIndex

A signed integer that specifies the index of an embedded control in the tab order of a form. Values less than zero specify an invalid index in the tab order.

The file format default is 0xFFFF, or –1, an invalid index.

Applies to: OleSiteConcrete

2.5.85 TabOrientation

An fmTabOrientation that specifies the position of the tabs of a form, relative to the control.

The file format default is 0x00000000, **fmTabOrientationTop**.

Applies to: TabStrip

2.5.85.1 fmTabOrientation

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmTabOrientationTop	0x00000000	The tabs are above the control.
fmTabOrientationBottom	0x00000001	The tabs are below the control.
fmTabOrientationLeft	0x00000002	The tabs are to the left of the control.
fmTabOrientationRight	0x00000003	The tabs are to the right of the control.

2.5.86 TabsAllocated

An unsigned integer that specifies the number of tabs that have been inserted since the control was created.

The file format default is 0x00000000.

Applies to: TabStrip

2.5.87 TabStyle

An fmTabStyle that specifies the display style of the tabs of a control.

The file format default is 0x00000000, **fmTabStyleTabs**.

Applies to: TabStrip

2.5.87.1 fmTabStyle

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmTabStyleTabs	0x00000000	Tabs
fmTabStyleButtons	0x00000001	Toggle buttons

Name	Value	Meaning
fmTabStyleNone	0x00000002	Not displayed

2.5.88 Tag

An fmString that is associated with a control and that contains data entered by the user. SHOULD be ignored.<13>

The file format default is a zero-length string.

Applies to: OleSiteConcrete | TabStrip

2.5.89 TakeFocusOnClick

A **Boolean** value that specifies whether the control takes the focus when clicked.

The file format default is TRUE.

Applies to: CommandButton

2.5.90 TextColumn

A signed integer that specifies the column in a ComboBox or ListBox to display to the user. The possible values for this property are specified as follows:

TextColumn	Meaning
-1	Specifies that the first column that has a Width greater than zero is displayed.
0	Specifies that row numbers are displayed.
1 or greater	Specifies the number of the column whose data is displayed.

The file format default is 0xFFFF, show first column with width greater than zero.

Applies to: ComboBox | ListBox

2.5.91 Tooltip

An fmString that specifies the tooltip for the control.

The file format default is a zero-length string.

Applies to: OleSiteConcrete | TabStrip

2.5.92 Tooltips

A **Boolean** value that specifies whether to display the tooltips of a TabStrip control.

The file format default is TRUE.

Applies to: TabStrip

2.5.93 TransitionEffect

An fmTransitionEffect that specifies the effect displayed when the user switches between pages in a control.

The file format default is 0x00000000, **fmTransitionEffectNone**.

Applies to: Page

2.5.93.1 fmTransitionEffect

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmTransitionEffectNone	0x00000000	No transition effect.
fmTransitionEffectCoverUp	0x00000001	Cover up transition effect.
fmTransitionEffectCoverRightUp	0x00000002	Cover right-up transition effect.
fmTransitionEffectCoverRight	0x00000003	Cover right transition effect.
fmTransitionEffectCoverRightDown	0x00000004	Cover right-down transition effect.
fmTransitionEffectCoverDown	0x00000005	Cover down transition effect.
fmTransitionEffectCoverLeftDown	0x00000006	Cover left-down transition effect.
fmTransitionEffectCoverLeft	0x00000007	Cover left transition effect.
fmTransitionEffectCoverLeftUp	0x00000008	Cover left-up transition effect.
fmTransitionEffectPushUp	0x00000009	Push up transition effect.
fmTransitionEffectPushRight	0x0000000A	Push right transition effect.
fmTransitionEffectPushDown	0x0000000B	Push down transition effect.
fmTransitionEffectPushLeft	0x0000000C	Push left transition effect.

2.5.94 TransitionPeriod

An unsigned integer that specifies the amount of time, in milliseconds, that the current page remains visible before switching to the new page that the user requested. MUST be in the range from zero through 10000.

The file format default is 0x00000000.

Applies to: Page

2.5.95 Value

An fmString that specifies the state or content of a control, as specified in the following table.

Control	Specifies
CheckBox OptionButton ToggleButton	Whether the item is selected. Set to 1 to specify that the control is selected. Set to zero to specify that the control is cleared. Any other string specifies that the control is neither selected nor cleared.
ComboBox ListBox	The value in the BoundColumn of the currently selected row when MultiSelect is set to 0x00 (fmMultiSelectSingle). MUST be a zero-length string for other values of MultiSelect, or when there is no selected row, or when BoundColumn is greater than the number of columns.
TextBox	The text in the control.

The file format default is a zero-length string.

Applies to<14>: CheckBox | ComboBox | ListBox | OptionButton | TextBox | ToggleButton

2.5.96 VariousPropertyBits

A VariousPropertiesBitfield that specifies the values of multiple properties on a control. Many of the fields in this structure apply to some types of controls, but not all types. All fields that do not apply to a particular type of control MUST be set to zero for that control.

The file format default is specified in the following table.

Controls	File format default	Properties set to 1 in file format default
CheckBox ComboBox ListBox OptionButton TextBox ToggleButton	0x2C80081B	Reserved1 Enabled BackStyle Reserved2 IntegralHeight WordWrap SelectionMargin AutoWordSelect HideSelection
CommandButton Image TabStrip ScrollBar SpinButton	0x0000001B	Reserved1 Enabled BackStyle Reserved2
Label	0x0080001B	Reserved1 Enabled BackStyle Reserved2 WordWrap

Applies to: CheckBox | ComboBox| CommandButton | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

2.5.96.1 VariousPropertiesBitfield

Specifies the VariousPropertyBits property.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
A	B	C	D	E	UnusedBits1						F	G	H	I	J	IMEMode				K	L	M	N	O	P	Q	R	S	T	U	V	W

A - Reserved1 (1 bit): MUST be set to 1 and MUST be ignored.

Applies to: CheckBox | ComboBox | CommandButton | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

B - Enabled (1 bit): Specifies whether the control can receive the focus and respond to user-generated events.

Applies to: CheckBox | ComboBox | CommandButton | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

C - Locked (1 bit): Specifies whether data in the control is locked for editing.

Applies to: CheckBox | ComboBox | CommandButton | ListBox | OptionButton | TextBox | ToggleButton

D - BackStyle (1 bit): Specifies the background style for this control. A value of 1 specifies that the control is opaque, and a value of zero specifies that the control is transparent. MUST be set to 1 for the following controls: ListBox, TabStrip, ScrollBar, SpinButton

Applies to: CheckBox | ComboBox | CommandButton | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

E - Reserved2 (1 bit): MUST be set to 1 and MUST be ignored.

Applies to: CheckBox | ComboBox | CommandButton | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

UnusedBits1 (5 bits): MUST be set to zero.

F - ColumnHeads (1 bit): Specifies whether column headings are displayed.

Applies to: ComboBox | ListBox

G - IntegralHeight (1 bit): For ListBox and TextBox controls, specifies whether the control shows only complete lines of text. MUST be set to 1 for the following controls: CheckBox, OptionButton, and ToggleButton.

Applies to: CheckBox | ListBox | OptionButton | TextBox | ToggleButton

H - MatchRequired (1 bit): Specifies whether a value entered into the TextBox part of a ComboBox is required to match an entry in the ListBox part of the control.

Applies to: ComboBox

I - Alignment (1 bit): Specifies the position of the Caption relative to the control. A value of 1 specifies that the Caption is to the left of the control, and a value of zero specifies that the Caption is to the right of the control.<15>

Applies to: CheckBox | OptionButton

J - Editable (1 bit): Specifies whether the user can type into the control. MUST be set to 1 for TextBox controls. MUST be set to 1 for ComboBox controls in which the DisplayStyle property is set to 0x03 (**fmDisplayStyleCombo**). SHOULD be set to zero for ComboBox controls in which the DisplayStyle property is set to 0x07 (**fmDisplayStyleDropList**), but MAY be set to 1, and MUST be ignored.<16>

Applies to: ComboBox | TextBox

IMEMode (4 bits): An fmIMEMode that specifies the default run-time mode of the **Input Method Editor (IME)** for the control as it receives focus.

Applies to<17>: CheckBox | ComboBox | CommandButton | Image | Label | ListBox | OptionButton | ScrollBar | SpinButton | TabStrip | TextBox | ToggleButton

K - DragBehavior (1 bit): Specifies whether dragging and dropping is enabled for the control.

Applies to: ComboBox | TextBox

L - EnterKeyBehavior (1 bit): Specifies the behavior of the ENTER key. A value of 1 specifies that pressing ENTER creates a new line. A value of zero specifies that pressing ENTER moves the focus to the next object in the tab order.

Applies to: TextBox

M - EnterFieldBehavior (1 bit): Specifies selection behavior when entering the control. A value of 1 specifies that the selection remains unchanged from the last time that the control was active. A value of zero specifies that all text in the control is selected when entering the control.

Applies to: ComboBox | TextBox

N - TabKeyBehavior (1 bit): Specifies whether tab characters can exist in the text of the control. A value of 1 specifies that pressing the TAB key inserts a tab character into the text of the control. A value of zero specifies that pressing the TAB key moves the focus to the next object in the tab order.

Applies to: TextBox

O - WordWrap (1 bit): Specifies whether the contents of the control automatically wrap at the end of a line. MUST be set to 1 for the following controls: ComboBox and ListBox.

Applies to: CheckBox | ComboBox | CommandButton | Label | ListBox | OptionButton | TextBox | ToggleButton

P - UnusedBits2 (1 bit): MUST be set to zero.

Q - BordersSuppress (1 bit): SHOULD be set to zero.<18>

Applies to: CheckBox | ComboBox | ListBox | OptionButton | TextBox | ToggleButton

R - SelectionMargin (1 bit): Specifies whether the user can select a line of text by clicking in the region to the left of the text. MUST be set to 1 for the following controls: CheckBox, ListBox, OptionButton, and ToggleButton.

Applies to: CheckBox | ComboBox | ListBox | OptionButton | TextBox | ToggleButton

S - AutoWordSelect (1 bit): Specifies the basic unit used to extend a selection. A value of 1 specifies that the basic unit is a single character. A value of zero specifies that the basic unit is a whole word. MUST be set to 1 for the following controls: CheckBox, ListBox, OptionButton, and ToggleButton.

Applies to: CheckBox | ComboBox | ListBox | OptionButton | TextBox | ToggleButton

T - AutoSize (1 bit): Specifies whether the control automatically resizes to display its entire contents.

This bit does not apply to the Image control and MUST be set to zero for that type of control. The Image control uses a separate AutoSize property that is stored in the ImagePropMask.

Applies to: CheckBox | ComboBox | CommandButton | Label | OptionButton | TextBox | ToggleButton

U - HideSelection (1 bit): Specifies whether selected text in the control appears highlighted when the control does not have focus. MUST be set to 1 for the following controls: CheckBox, ListBox, OptionButton, and ToggleButton.

Applies to: CheckBox | ComboBox | ListBox | OptionButton | TextBox | ToggleButton

V - AutoTab (1 bit): Specifies whether the focus automatically moves to the next control when the user enters the maximum number of characters specified by the MaxLength property.

Applies to: ComboBox | TextBox

W - MultiLine (1 bit): Specifies whether the control can display more than one line of text.

Applies to: TextBox

2.5.96.2 fmIMEMode

The following table specifies the values of this enumeration and their meanings.

Name	Value	Meaning
fmIMEModeNoControl	0x0	Does not control **IME**.
fmIMEModeOn	0x1	IME on.
fmIMEModeOff	0x2	IME off. English mode.
fmIMEModeDisable	0x3	IME off. User cannot turn on IME by keyboard.
fmIMEModeHiragana	0x4	IME on with full-width hiragana mode.
fmIMEModeKatakana	0x5	IME on with full-width katakana mode.
fmIMEModeKatakanaHalf	0x6	IME on with half-width katakana mode.
fmIMEModeAlphaFull	0x7	IME on with full-width alphanumeric mode.
fmIMEModeAlpha	0x8	IME on with half-width alphanumeric mode.
fmIMEModeHangulFull	0x9	IME on with full-width Hangul mode.
fmIMEModeHangul	0xA	IME on with half-width Hangul mode.
fmIMEModeHanziFull	0xB	IME on with full-width **hanzi** mode.
fmIMEModeHanzi	0xC	IME on with half-width hanzi mode.

2.5.97 Width

A signed integer that specifies the width of a column, in **HIMETRIC** units, in a ComboBox or ListBox. A value of –1 specifies that the client application determines the width.

The file format default is 0xFFFFFFFF, –1.

Applies to: ComboBox | ListBox

2.5.98 Zoom

A signed integer that specifies the magnification of embedded controls, in percentage points of the size of the parent control. MUST be greater than or equal to 10 (10 percent of actual size) and less than or equal to 400 (four times or 400 percent of actual size).

The file format default is 100, or actual size.

Applies to: Form

2.6 Algorithms

2.6.1 ClassTable Rowset Algorithm

This section specifies the algorithms used to determine which method or property of a **type information** supports a way of fetching rows of data sequentially, getting the data from those rows, and managing rows of data.

The following are used in the algorithms specified in section 2.6.1.1 and section 2.6.1.2:

- **ITypeInfo::GetTypeAttr** is specified in [MS-OAUT] section 3.7.4.1.
- **TYPEATTR** is specified in [MS-OAUT] section 2.2.44.
- **TYPEFLAG_FDUAL** and the **TYPEFLAGS** type are specified in [MS-OAUT] section 2.2.16.
- **ITypeInfo::GetFuncDesc** is specified in [MS-OAUT] section 3.7.4.3.
- **FUNCDESC** is specified in [MS-OAUT] section 2.2.42.
- **INVOKE_PROPERTYPUT**, **INVOKE_PROPERTYGET**, and the **INVOKEKIND** type are specified in [MS-OAUT] section 2.2.14.
- **TYPEDESC** is specified in [MS-OAUT] section 2.2.37.
- **VT_PTR** and other VARIANT type constants are specified in [MS-OAUT] section 2.2.7.
- **HREFTYPE** is specified in [MS-OAUT] section 2.2.36.
- **ITypeInfo::GetRefTypeInfo** is specified in [MS-OAUT] section 3.7.4.10.
- **ITypeInfo** is specified in [MS-OAUT] section 3.7.4.
- **ITypeInfo::GetVarDesc** is specified in [MS-OAUT] section 3.7.4.4.
- **VARDESC** is specified in [MS-OAUT] section 2.2.43.

2.6.1.1 DispidRowset Algorithm

The result of the following algorithm can determine the property value of the **DispidRowset** field of a ClassInfoDataBlock.

```
CALL the GetTypeAttr method of this type information returning TYPEATTR ta.
IF ta.wTypeFlags and TYPEFLAG_FDUAL THEN
  FOR each function in this type information
    CALL the GetFuncDesc method of this type information with the index of this
function, returning FUNCDESC fd.
    IF fd.lprgelemdescParam is NOT EQUAL TO zero AND fd.invkind is EQUAL TO
INVOKE PROPERTYPUT THEN
      SET TYPEDESC td to fd.lprgelemdescParam.tdesc.
      IF td.vt is EQUAL TO VT_PTR THEN
        SET td to td.lptdesc.
      END IF
      IF td.vt is EQUAL TO VT_USERDEFINED THEN
        SET HREFTYPE hr to td.hreftype.
        CALL the GetRefTypeInfo of this type information with hr, returning
ITypeInfo ti2.
        CALL the GetTypeAttr method of ti2, returning TYPEATTR ta2.
        IF ta2.guid is EQUAL TO {0C733A52-2A1C-11CE-ADE5-00AA0044773D} THEN
          RETURN fd.memid.
        END IF
      END IF
```

```
    END IF
  END FOR
ELSE
  FOR each data property in this type information
    CALL the GetVarDesc method of this type information with the index of this
property, returning VARDESC vd.
    SET td to vd.elemdescVar.tdesc.
    IF td.vt is EQUAL TO VT_PTR THEN
      SET td to td.lptdesc.
    END IF
    IF td.vt is EQUAL TO VT_USERDEFINED THEN
      SET HREFTYPE hr to td.hreftype.
      CALL the GetRefTypeInfo of this type information with hr, returning
ITypeInfo ti2.
      CALL the GetTypeAttr method of ti2, returning TYPEATTR ta2.
      IF ta2.guid is EQUAL TO {0C733A52-2A1C-11CE-ADE5-00AA0044773D} THEN
        RETURN vd.memid.
      END IF
    END IF
  END FOR
END IF
```

2.6.1.2 SetRowset Algorithm

The result of the following algorithm can determine the property value of the **SetRowset** field of a ClassInfoDataBlock.

```
CALL the GetTypeAttr method of this type information returning TYPEATTR ta.
IF ta.wTypeFlags and TYPEFLAG_FDUAL THEN
  FOR each function in this type information
    CALL the GetFuncDesc method of this type information with the index of this
function, returning FUNCDESC fd.
    IF fd.lprgelemdescParam is NOT EQUAL TO zero AND fd.invkind is EQUAL TO
INVOKE_PROPERTYPUT THEN
      SET TYPEDESC td to fd.lprgelemdescParam.tdesc.
      IF td.vt is EQUAL TO VT_PTR THEN
        SET td to td.lptdesc.
      END IF
      IF td.vt is EQUAL TO VT_USERDEFINED THEN
        SET HREFTYPE hr to td.hreftype.
        CALL the GetRefTypeInfo of this type information with hr, returning
ITypeInfo ti2.
        CALL the GetTypeAttr method of ti2, returning TYPEATTR ta2.
        IF ta2.guid is EQUAL TO {0C733A52-2A1C-11CE-ADE5-00AA0044773D} THEN
          RETURN fd.oVft.
        END IF
      END IF
    END IF
  END FOR
END IF
```

3 Structure Examples

3.1 String Compression

The following example shows when and how a string can be compressed:

The **Unicode** string "ABC" has the following byte sequence:

```
0x41 0x00 0x42 0x00 0x43 0x00
```

This string is compressible because the high-order byte of each character is zero. When compressed, the byte sequence is stored as follows:

```
0x41 0x42 0x43
```

The count of bytes is set to 3.

On the other hand, the Unicode string "地球" (Japanese for "Earth") has the following byte sequence:

```
0x30 0x57 0x03 0x74
```

This string is not compressible, so the count of bytes is 4, and the string is stored as described previously.

3.2 CommandButton

The following example shows a CommandButtonControl structure. The CommandButton is embedded in a UserForm and has the following properties set:

- The Caption property is set to "CommandButton1".
- The Height and Width properties are set to 36 **points** and 126 points, respectively.
- The MousePointer property is set to **fmMousePointerCustomer**.
- The MouseIcon property is set to a picture.<19>

Although this example uses the CommandButtonControl, the persistence of the data structures for this control can also be applied to other control types.

The following table shows the top-level representation of the CommandButtonControl structure.

Offset	Size	Structure	Value
00000000	036A	CommandButtonControl	
00000000	0001	BYTE **- MinorVersion**	0x00
00000001	0001	BYTE **- MajorVersion**	0x02
00000002	0002	USHORT **- cbCommandButton**	0x0024
00000004	0004	**A**: CommandButtonPropMask **- PropMask**	
00000008	0008	**B**: CommandButtonDataBlock **- DataBlock**	

Offset	Size	Structure	Value
00000010	0018	**C**: CommandButtonExtraDataBlock **- ExtraDataBlock**	
00000028	0316	**D**: CommandButtonStreamData **- StreamData**	
0000033E	002C	TextProps **- TextProps**	

Figure 24: CommandButtonControl structure

The following are detailed examples of **PropMask**, **DataBlock**, **ExtraDataBlock**, and **StreamData**. An example of the **TextProps** structure has been omitted because it closely resembles this example.

MinorVersion: 0x00 specifies the minor version of the control.

MajorVersion: 0x02 specifies the major version of the control.

cbCommandButton: 0x0024 specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock.**

The following table shows which properties of the CommandButtonControl are not set to the file format default. If a bit has is set to 1, the corresponding property value in the CommandButtonDataBlock is not the file format default and is stored in the file. If a bit is set to zero, the corresponding property value is the file format default and is not stored in the file. As previously described, the Caption, Size (**Height** and **Width**), MousePointer, and MouseIcon properties are set to a value different from the file format default, and only these bits are set to 1.

Offset	Size	Structure	Value
00000004	0004	**A**: CommandButtonPropMask **- PropMask**	
00000004	1 bit	BOOL **- fForeColor**	0
00000004	1 bit	BOOL **- fBackColor**	0
00000004	1 bit	BOOL **- fVariousPropertyBits**	0
00000004	1 bit	BOOL **- fCaption**	1
00000004	1 bit	BOOL **- fPicturePosition**	0
00000004	1 bit	BOOL **- fSize**	1
00000004	1 bit	BOOL **- fMousePointer**	1
00000004	1 bit	BOOL **- fPicture**	0
00000004	1 bit	BOOL **- fAccelerator**	0
00000004	1 bit	BOOL **- fTakeFocusOnClick**	0
00000004	1 bit	BOOL **- fMouseIcon**	1
00000004	21 bits	BOOL **- UnusedBits**	0

Figure 25: CommandButtonPropMask structure

fForeColor: Zero specifies that the value of the ForeColor property is the file format default and is not stored in the file.

fBackColor: Zero specifies that the value of the BackColor property is the file format default and is not stored in the file.

fVariousPropertyBits: Zero specifies that the value of the VariousPropertyBits property is the file format default and is not stored in the file.

fCaption: 1 specifies that the Caption property is set to a value that is not the file format default and is stored in the CommandButtonDataBlock and CommandButtonExtraDataBlock.

fPicturePosition: Zero specifies that the value of the PicturePosition property is the file format default and is not stored in the file.

fSize: 1 specifies that the Size property is set to a value that is not the file format default and is stored in the CommandButtonExtraDataBlock.

fMousePointer: 1 specifies that the MousePointer property is set to a value that is not the file format default and is stored in the CommandButtonDataBlock.

fAccelerator: Zero specifies that the value of the Accelerator property is the file format default and is not stored in the file.

fTakeFocusOnClick: Zero specifies that the value of the TakeFocusOnClick property is the file format default and is not stored in the file.

fMouseIcon: 1 specifies that the MouseIcon property is set to a value that is not the file format default and is stored in the CommandButtonStreamData.

The following table shows the CommandButtonDataBlock. The **DataBlock** stores property values that are 4 bytes or smaller and are not the file format default. In this example, MousePointer is the only property whose value is stored in the **DataBlock**. For the Caption property, the length and compression flag of the Caption string are stored in the **DataBlock**, but the Caption string itself is stored in the CommandButtonExtraDataBlock.

Offset	Size	Structure	Value
00000008	0008	**B**: CommandButtonDataBlock **- DataBlock**	
00000008	0004	CountOfBytesWithCompressionFlag **- Caption**	
00000008	31 bits	ULONG **- cb**	0x0000000E
00000008	1 bit	BOOL **- fCompressed**	1
0000000C	0001	fmMousePointer **- MousePointer**	0x63
0000000D	0001	Align **- Padding1**	0x00
0000000E	0002	SHORT **- MouseIcon**	0xFFFF
00000010	0000	Align **- Padding2**	

Figure 26: CommandButtonDataBlock structure

Caption.cb: 0x0000000E specifies that the size, after compression, of the Caption string in the CommandButtonExtraDataBlock is 14 bytes.

Caption.fCompressed: 1 specifies that the Caption string in the CommandButtonExtraDataBlock is compressed.

MousePointer: 0x63 specifies that the MousePointer has the value **fmMousePointerCustom** and the icon is specified in the MouseIcon property.

Padding1: 1 byte of unused data needed for the value of the MousePointer property to align to an offset divisible by 2 from the beginning of the CommandButtonControl.

MouseIcon: 0xFFFF specifies that the MouseIcon property is set.

Padding2: Because the size of the CommandButtonDataBlock is divisible by 4, there is no need to add any padding at the end of the CommandButtonDataBlock.

The following table shows the CommandButtonExtraDataBlock. For this example, the Caption and Size properties are the only properties stored in the CommandButtonExtraDataBlock.

Offset	Size	Structure	Value
00000010	0018	**C**: CommandButtonExtraDataBlock **- ExtraDataBlock**	
00000010	000E	Caption **- Caption**	CommandButton1
0000001E	0002	Array of bytes **- Padding**	0x0000
00000020	0008	Size **- Size**	
00000020	0004	LONG **- Width**	0x0000115D
00000024	0004	LONG **- Height**	0x000004F6

Figure 27: CommandButtonExtraDataBlock structure

Caption: "CommandButton1" specifies the compressed string for the Caption property.

Padding: 2 bytes of unused data needed for the size of the compressed string to be divisible by 4.

Size.Width: 0x0000115D specifies that the width of the CommandButtonControl is 4445 **HIMETRIC** units, or 126 points.

Size.Height: 0x000004F6 specifies that the height of the CommandButtonControl is 1270 HIMETRIC units, or 36 points.

The following table shows the CommandButtonStreamData. The **StreamData** stores picture properties of the CommandButtonControl. For this example, MouseIcon is the only picture property persisted.

Offset	Size	Structure	Value
00000028	0316	**D**: CommandButtonStreamData **- StreamData**	
00000028	0316	MouseIcon **- MouseIcon**	
00000028	0010	GUID **- CLSID_StdPicture**	04 52 E3 0B 91 8F CE 11 ...
00000038	0004	ULONG **- Preamble**	0x0000746C
0000003C	0004	ULONG **- Size**	0x000002FE
00000040	02FE	Array of bytes **- Picture**	00 00 02 00 01 00 20 20 ...

Figure 28: CommandButtonStreamData structure

MouseIcon.CLSID_StdPicture: 04 52 E3 0B 91 8F CE 11 9D E3 00 AA 00 4B B8 51 specifies the **CLSID** of the StdPicture object in **little-endian** format. The CLSID in standard **GUID** [MS-DTYP] format is {0BE35204-8F91-11CE-9DE3-00AA004BB851}.

MouseIcon.Preamble: 0x0000746C specifies a constant value for the StdPicture object.

MouseIcon.Size: 0x000002FE specifies the size, in bytes, of **Picture**.

MouseIcon.Picture: 00 00 02 00 01 00 20 20 ... specifies the embedded icon to be used for the MouseIcon property. The complete value of this property has been omitted for brevity. For this example, the contents of this property are the same as the contents of the up_l.cur file.

3.3 MultiPage Control

The following example shows the structure of the "x" stream in the MultiPage Control. An example of the "f" stream and the "o" stream has been omitted because it closely resembles the UserForm example.

The MultiPage Control in this example has two Pages. The first Page has the following properties:

- The TransitionEffect property is set to fmTransitionEffectCoverUp.
- The TransitionPeriod property is set to 10 milliseconds.

The following table shows the top-level representation of the "x" stream in the MultiPage Control.

Offset	Size	Structure
00000000	0038	Stream **- MultiPageControlExtendedStream**
00000000	0020	PageProperties array **- PageProperties**
00000000	0008	PageProperties **- PageProperties1**
00000008	0010	**A**: PageProperties **- PageProperties2**
00000018	0008	PageProperties **- PageProperties3**
00000020	0018	**B**: MultiPageProperties **- MultiPageControl**

Figure 29: MultiPage control "x" stream

The following are detailed examples of PageProperties and MultiPageProperties.

PageProperties: An array of PageProperties. The first PageProperties in this array is not used and is ignored. The second and third PageProperties in the array persist the properties of the first and second Pages in the control, respectively.

The following table shows the structure of the second PageProperties in the **PageProperties** array. It **persists** the TransitionEffect and TransitionPeriod properties of the first Page inside the control.

Offset	Size	Structure	Value
00000008	0010	**A**: PageProperties **- PageProperties**	
00000008	0001	BYTE **- MinorVersion**	0x00
00000009	0001	BYTE **- MajorVersion**	0x02
0000000A	0002	USHORT **- cbPage**	0x000C
0000000C	0004	**C**: PagePropMask **- PropMask**	
00000010	0008	**D**: PageDataBlock **- DataBlock**	

Figure 30: PageProperties structure

MinorVersion: 0x00 specifies the minor version of the control.

MajorVersion: 0x02 specifies the major version of the control.

cbPage: 0x000C specifies the sum of the sizes, in bytes, of **PropMask** and **DataBlock**.

The following table shows the properties of the PageProperties that are not set to the file format default. If a bit is set to 1, the corresponding property value in the PageDataBlock is not the file format default and is stored in the file. If a bit is set to zero, the corresponding property value is the file format default and is not stored in the file. As previously described, the TransitionEffect and TransitionPeriod properties are set to a value different from the file format default, and only these bits are set to 1.

Offset	Size	Structure	Value
0000000C	0004	**C**: PagePropMask **- PropMask**	
0000000C	1 bit	BOOL **- Unused1**	0
0000000C	1 bit	BOOL **- fTransitionEffect**	1
0000000C	1 bit	BOOL **- fTransitionPeriod**	1
0000000C	29 bits	BOOL **- UnusedBits**	0

Figure 31: PagePropMask structure

fTransitionEffect: 1 specifies that the TransitionEffect property is set to a value that is not the file format default and is stored in the PageDataBlock.

fTransitionPeriod: 1 specifies that the TransitionPeriod property is set to a value that is not the file format default and is stored in the PageDataBlock.

The following table shows the PageDataBlock. The **DataBlock** stores property values that are 4 bytes or smaller and are not the file format default. In this example, the TransitionEffect and the TransitionPeriod are both stored in the **DataBlock** because each has a size of 4 bytes.

Offset	Size	Structure	Value
00000010	0008	**D**: PageDataBlock **- DataBlock**	
00000010	0004	fmTransitionEffect **- TransitionEffect**	0x00000001
00000014	0004	ULONG **- TransitionPeriod**	0x0000000A

Figure 32: PageDataBlock structure

TransitionEffect: 0x00000001 specifies that the value of the TransitionEffect property is fmTransitionEffectCoverUp.

TransitionPeriod: 0x0000000A specifies that the value of the TransitionPeriod property is 10 milliseconds.

The following table shows the MultiPageProperties structure, which persists the PageCount, ID, Flags and **PageIDs** properties of the control.

Offset	Size	Structure	Value
00000020	0018	**B**: MultiPageProperties **- MultiPageControl**	
00000020	0001	BYTE **- MinorVersion**	0x00
00000021	0001	BYTE **- MajorVersion**	0x02
00000022	0002	USHORT **- cbMultiPageControlProperties**	0x000C

Offset	Size	Structure	Value
00000024	0004	**E**: MultiPagePropertiesPropMask **- PropMask**	
00000028	0008	**F**: MultiPagePropertiesDataBlock **- DataBlock**	
00000030	0008	**G**: PageIDs **- PageIDs**	

Figure 33: MultiPageProperties structure

MinorVersion: 0x00 specifies the minor version of the control.

MajorVersion: 0x02 specifies the major version of the control.

cbMultiPageControlProperties: 0x000C specifies the sum of the sizes, in bytes, of **PropMask** and **DataBlock**.

The following table shows the properties of the MultiPageProperties that are not set to the file format default. If a bit is set to 1, the corresponding property value in the MultiPagePropertiesDataBlock is not the file format default and is stored in the file. If a bit is set to zero, the corresponding property value is the file format default and is not stored in the file. As previously described, the PageCount and ID properties are set to a value different from the file format default, and only these bits are set to 1.

Offset	Size	Structure	Value
00000024	0004	**E**: MultiPagePropertiesPropMask **- PropMask**	
00000024	1 bit	BOOL **- Unused1**	0
00000024	1 bit	BOOL **- fPageCount**	1
00000024	1 bit	BOOL **- fID**	1
00000024	1 bit	BOOL **- fFlags**	0
00000024	28 bits	BOOL **- UnusedBits**	0

Figure 34: MultiPagePropertiesPropMask structure

fPageCount: 1 specifies that the value of the PageCount property is stored in the MultiPagePropertiesDataBlock.

fID: 1 specifies that the value of the ID property is stored in the MultiPagePropertiesDataBlock.

fFlags: Zero specifies that the value of the Flags property is the file format default.

The following table shows the MultiPagePropertiesDataBlock. The **DataBlock** stores property values that are 4 bytes or smaller and are not the file format default. In this example, the PageCount and the ID are both stored in the **DataBlock**.

Offset	Size	Structure	Value
00000028	0008	**F**: MultiPagePropertiesDataBlock **- DataBlock**	
00000028	0004	LONG **- PageCount**	0x00000002
0000002C	0004	LONG **- ID**	0x00000002

Figure 35: MultiPagePropertiesDataBlock structure

PageCount: 0x00000002 specifies that the value of the PageCount property is 2.

ID: 0x00000002 specifies that the value of the ID property for this control is 2.

The following table shows the **PageIDs** array. The table shows the value of the ID property for each of the two Pages inside the MultiPage Control in this example.

Offset	Size	Structure	Value
00000030	0008	**G**: PageIDs **- PageIDs**	
00000030	0004	LONG **- ID1**	0x00000003
00000034	0004	LONG **- ID2**	0x00000004

Figure 36: PageIDs array

ID1: 0x00000003 specifies that the value of the ID property of the first Page in this control is 3.

ID2: 0x00000004 specifies that the value of the ID property of the second Page in this control is 4.

3.4 UserForm

The following example shows a FormControl with an embedded RefEdit control. The RefEdit control is an **ActiveX control** that displays a **range** value that references **cells** in a **datasheet**.

The FormControl has the following properties set:

- The Font is set to "Verdana".
- The LogicalSize **Height** and **Width** properties are set to 1000 and 2000 **points**, respectively.
- The DisplayedSize **Height** and **Width** properties are set to 132 and 166.5 points, respectively.
- The NextAvailableID is set to 1.
- The ShapeCookie is set to 1.
- The DrawBuffer is set to 32000 pixels.
- The CountOfSites is set to 1.
- The DepthTypeCount is set to zero.
- The ID of the embedded control is set to 1.
- The Name of the embedded control is set to "RefEdit1".
- The TabIndex of the embedded control is set to zero.
- The ClsidCacheIndex is set to 0x8000.
- The SitePosition Top and Left properties of the embedded control are set to 60 and 48 points, respectively.

The top-level structure of the embedded RefEdit control in the "o" **stream** is illustrated in the final figure, ObjectStream structure, in this section. The **CommandButton Example** (section 3.2) illustrates the persistence of an embedded control.

The top-level representation of a FormControl structure contains the following streams: "f", "o", "\002.1.2.4CompObj", and "vbFrame". The latter two streams are not persisted as part of FormControl and are not detailed in this example.

The following table shows the top-level representation of the Form stream in a FormControl structure. It displays the FormPropMask, FormDataBlock, FormExtraDataBlock, FormStreamData, and FormSiteData for this FormControl.

Offset	Size	Structure	Value
00000000	00BC	Stream **- FormStream**	
00000000	00BC	FormControl **- Form**	
00000000	0001	BYTE **- MinorVersion**	0x00
00000001	0001	BYTE **- MajorVersion**	0x04
00000002	0002	USHORT **- cbForm**	0x0024
00000004	0004	**A**: FormPropMask **- PropMask**	
00000008	0010	**B**: FormDataBlock **- DataBlock**	
00000018	0010	**C**: FormExtraDataBlock **- ExtraDataBlock**	
00000028	0022	**D**: FormStreamData **- StreamData**	
0000004A	0072	**E**: FormSiteData **- SiteData**	

Figure 37: FormStream structure

The following are detailed examples of the **PropMask**, **DataBlock**, **ExtraDataBlock**, **StreamData** and **SiteData**.

Form.MinorVersion: 0x00 specifies the minor version of the control.

Form.MajorVersion: 0x04 specifies the major version of the control.

Form.cbForm: 0x0024 specifies that the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock** of this FormControl is 36**.**

The following table shows the properties of the FormControl that are not set to the file format default. If a bit is set to 1, the value of the corresponding property in the FormDataBlock or FormExtraDataBlock is not the file format default and is stored in the file. If a bit is set to zero, the value of the corresponding property is the file format default and is not stored in the file. The NextAvailableID, DisplayedSize, LogicalSize, Font, ShapeCookie, and DrawBuffer properties are set to a value different from the file format default, and only these bits are set to 1.

Offset	Size	Structure	Value
00000004	0004	**A**: FormPropMask **- PropMask**	
00000004	1 bit	BOOL **- Unused1**	0
00000004	1 bit	BOOL **- fBackColor**	0
00000004	1 bit	BOOL **- fForeColor**	0
00000004	1 bit	BOOL **- fNextAvailableID**	1
00000004	2 bits	BOOL **- Unused2**	0
00000004	1 bit	BOOL **- fBooleanProperties**	0
00000004	1 bit	BOOL **- fBorderStyle**	0
00000004	1 bit	BOOL **- fMousePointer**	0
00000004	1 bit	BOOL **- fScrollBars**	0

Offset	Size	Structure	Value
00000004	1 bit	BOOL **- fDisplayedSize**	1
00000004	1 bit	BOOL **- fLogicalSize**	1
00000004	1 bit	BOOL **- fScrollPosition**	0
00000004	1 bit	BOOL **- fGroupCnt**	0
00000004	1 bit	BOOL **- Reserved**	0
00000004	1 bit	BOOL **- fMouseIcon**	0
00000004	1 bit	BOOL **- fCycle**	0
00000004	1 bit	BOOL **- fSpecialEffect**	0
00000004	1 bit	BOOL **- fBorderColor**	0
00000004	1 bit	BOOL **- fCaption**	0
00000004	1 bit	BOOL **- fFont**	1
00000004	1 bit	BOOL **- fPicture**	0
00000004	1 bit	BOOL **- fZoom**	0
00000004	1 bit	BOOL **- fPictureAlignment**	0
00000004	1 bit	BOOL **- fPictureTiling**	0
00000004	1 bit	BOOL **- fPictureSizeMode**	0
00000004	1 bit	BOOL **- fShapeCookie**	1
00000004	1 bit	BOOL **- fDrawBuffer**	1
00000004	4 bits	BOOL **- Unused3**	0

Figure 38: FormPropMask structure

Fields that are set to zero specify that their corresponding property is not stored; they have been omitted from the following description.

fNextAvailableID: 1 specifies that the NextAvailableID property is not set to the file format default and is stored in the FormDataBlock.

fDisplayedSize: 1 specifies that the DisplayedSize property is not set to the file format default and is stored in the FormExtraDataBlock.

fLogicalSize: 1 specifies that the LogicalSize property is not set to the file format default and is stored in the FormExtraDataBlock.

fFont: 1 specifies that the Font property is not set to the file format default and is stored in the FormDataBlock and FormStreamData.

fShapeCookie: 1 specifies that the ShapeCookie property is not set to the file format default and is stored in the FormDataBlock.

fDrawBuffer: 1 specifies that the DrawBuffer property is not set to the file format default and is stored in the FormDataBlock.

The following table shows the FormDataBlock. The **DataBlock** stores property values that are 4 bytes or smaller and are not the file format defaults. In this example, NextAvailableID, Font, ShapeCookie, and DrawBuffer are the only properties stored in the **DataBlock**.

Offset	Size	Structure	Value
00000008	0010	**B**: FormDataBlock **- DataBlock**	
00000008	0004	FormNextAvailableId **- NextAvailableID**	0x00000001
0000000C	0002	SHORT **- Font**	0xFFFF
0000000E	0002	Align **- Padding**	0x0000
00000010	0004	FormShapeCookie **- ShapeCookie**	0x00000001
00000014	0004	FormDrawBuffer **- DrawBuffer**	0x00007D00

Figure 39: FormDataBlock structure

NextAvailableID: 0x00000001 specifies that the largest ID that has been used by an embedded control on the form is 1, so the next available valid ID is 2.

Font: 0xFFFF specifies that the Font property is stored in the FormStreamData.

ShapeCookie: 0x00000001 specifies that the dynamic **type information** of a form has changed once.

DrawBuffer: 0x00007D00 specifies that the number of pixels in a buffer into which the form can be drawn is 32000.

The following table shows the FormExtraDataBlock. For this example, the DisplayedSize and LogicalSize properties are the only properties stored in the FormExtraDataBlock.

Offset	Size	Structure	Value
00000018	0010	**C**: FormExtraDataBlock **- ExtraDataBlock**	
00000018	0008	fmSize **- DisplayedSize**	
00000018	0004	LONG **- Width**	0x000016F2
0000001C	0004	LONG **- Height**	0x00001231
00000020	0008	fmSize **- LogicalSize**	
00000020	0004	LONG **- Width**	0x0001139C
00000024	0004	LONG **- Height**	0x000089CE

Figure 40: FormExtraDataBlock structure

DisplayedSize.Width: 0x000016F2 specifies that the physical width of the FormControl is 5874 HIMETRIC units, or 166.5 points.

DisplayedSize.Height: 0x00001231 specifies that the physical height of the FormControl is 4657 HIMETRIC units, or 132 points.

LogicalSize.Width: 0x0001139C specifies that the scrollable width of the FormControl is 70556 HIMETRIC units, or 2000 points.

LogicalSize.Height: 0x000089CE specifies that the scrollable height of the FormControl is 35278 HIMETRIC units, or 1000 points.

The following table shows the FormStreamData. The **StreamData** is used to store the Font property of the FormControl.

Offset	Size	Structure	Value
00000028	0022	**D**: FormStreamData **- StreamData**	
00000028	0010	GUID **- FontGUID**	03 52 E3 0B 91 8F CE 11 ...
00000038	0012	FormFont **- StdFont**	
00000038	0001	BYTE **- Version**	0x01
00000039	0002	SHORT **- sCharset**	0x0000
0000003B	0001	FONTFLAGS **- bFlags**	0x00
0000003C	0002	SHORT **- sWeight**	0x0190
0000003E	0004	ULONG **- ulHeight**	0x00014244
00000042	0001	BYTE **- bFaceLen**	0x07
00000043	0007	Array of bytes **- FontFace**	Verdana

Figure 41: FormStreamData structure

FontGUID: 03 52 E3 0B 91 8F CE 11 9D E3 00 AA 00 4B B8 51 specifies, in **little-endian** format, that the **CLSID** of the FormFont is a StdFont. The CLSID in standard **GUID** [MS-DTYP] format is {0BE35203-8F91-11CE-9DE3-00AA004BB851}.

StdFont.Version: 0x01 specifies the version of StdFont that is stored in the file.

StdFont.sCharset: 0x0000 specifies the **character set** of the Font.

StdFont.bFlags: 0x00 specifies that the Font style is not bold, italic, underlined, or crossed out.

StdFont.sWeight: 0x0190 specifies that the weight of the Font is 400.

StdFont.ulHeight: 0x00014244 specifies that the height of the Font is 8.25 points.

StdFont.bFaceLen: 0x07 specifies the length, in bytes, of **FontFace**.

StdFont.FontFace: "Verdana" specifies the name of the Font in ASCII characters.

The following table shows the FormSiteData, which is used to store the properties of embedded controls in a UserForm. This structure contains the SITE_TYPE of embedded controls and an array of OleSiteConcreteControls that describe these controls.

Offset	Size	Structure	Value
0000004A	0072	**E**: FormSiteData **- SiteData**	
0000004A	0002	SHORT **- CountOfSiteClassInfo**	0x0001
0000004C	003C	**F**: ClassTable **- ClassTable**	
00000088	0004	ULONG **- CountOfSites**	0x00000001
0000008C	0004	ULONG **- CountOfBytes**	0x0000002C
00000090	0002	SiteDepthsAndTypes array **- SiteDepthsAndTypes**	

Offset	Size	Structure	Value
00000090	0002	FormObjectDepthTypeCount **- DepthTypeCount**	
00000090	0001	BYTE **- Depth**	0x00
00000091	7 bits	BYTE **- TypeOrCount**	0x01
00000091	1 bit	BOOL **- fCount**	0
00000092	0002	Array of bytes **- ArrayPadding**	9D 9D
00000094	0028	Sites array **- Sites**	
00000094	0028	**G**: OleSiteConcreteControl **- Site**	

Figure 42: FormSiteData structure

CountOfSiteClassInfo: 0x0001 specifies that there is one element in **ClassTable**. This field is stored because the value of **DataBlock.BooleanProperties.FORM_FLAG_DONTSAVECLASSTABLE** in the FormControl that contains this FormSiteData is the file format default, zero.

CountOfSites: 0x00000001 specifies that there is one element in **Sites**.

CountOfBytes: 0x0000002C specifies that the sum of the sizes, in bytes, of the **SiteDepthsAndTypes**, **ArrayPadding**, and **Sites** of this FormSiteData is 44.

SiteDepthsAndTypes.DepthTypeCount.Depth: 0x00 specifies that no controls exist in the hierarchy between the embedded control and the parent control.

SiteDepthsAndTypes.DepthTypeCount.TypeOrCount: 0x01 specifies that the SITE_TYPE of the embedded control is **ST_Ole**.

SiteDepthsAndTypes.DepthTypeCount.fCount: Zero specifies that **TypeOrCount** is not a count of consecutive embedded controls.

ArrayPadding: 9D 9D are unused bytes that make the total size of **SiteDepthsAndTypes** divisible by 4.

Sites.Site: Properties of the embedded control in the UserForm as persisted to a stream.

The following table shows the structure representation of the SiteClassInfo in a FormControl. It displays the PropMask, DataBlock and ExtraDataBlock for this SiteClassInfo. The **ClsID**, **DispEvent**, **DefaultProg**, and **DispidBind** members are set to a value different from the file format default, and only these bits are set to 1.

Offset	Size	Structure	Value
0000004C	003C	**F**: ClassTable **- ClassTable**	
0000004C	003C	SiteClassInfo **- ClassInfo**	
0000004C	0002	USHORT **- Version**	0x0000
0000004E	0002	USHORT **- cbClassTable**	0x0038
00000050	0004	ClassInfoPropMask **- PropMask**	
00000050	1 bit	BOOL **- fClsID**	1
00000050	1 bit	BOOL **- fDispEvent**	1

Offset	Size	Structure	Value
00000050	1 bit	BOOL **- Unused1**	0
00000050	1 bit	BOOL **- fDefaultProg**	1
00000050	1 bit	BOOL **- fClassFlags**	0
00000050	1 bit	BOOL **- fCountOfMethods**	0
00000050	1 bit	BOOL **- fDispidBind**	1
00000050	1 bit	BOOL **- fGetBindIndex**	0
00000050	1 bit	BOOL **- fPutBindIndex**	0
00000050	1 bit	BOOL **- fBindType**	0
00000050	1 bit	BOOL **- fGetValueIndex**	0
00000050	1 bit	BOOL **- fPutValueIndex**	0
00000050	1 bit	BOOL **- fValueType**	0
00000050	1 bit	BOOL **- fDispidRowset**	0
00000050	1 bit	BOOL **- fSetRowset**	0
00000050	17 bits	BOOL **- Unused2**	0
00000054	0004	ClassInfoDataBlock **- DataBlock**	
00000054	0004	LONG **- DispidBind**	0x00000000
00000058	0030	ClassInfoExtraDataBlock **- ExtraDataBlock**	
00000058	0010	GUID **- ClsID**	12 45 02 00 00 00 00 00 ...
00000068	0010	GUID **- DispEvent**	12 1D D2 8B 42 EC CE 11 ...
00000078	0010	GUID **- DefaultProg**	18 45 02 00 00 00 00 00 ...

Figure 43: ClassTable structure

PropMask bits set to zero specify that no value is stored in their corresponding field in the ClassInfoDataBlock or ClassInfoExtraDataBlock; they have been omitted from the following description.

ClassInfo.Version: 0x0000 specifies the version of this SiteClassInfo.

ClassInfo.cbClassTable: 0x0038 specifies that the sum of the sizes, in bytes, of **ClassInfoPropMask**, **ClassInfoDataBlock**, and **ClassInfoExtraDataBlock** in this ClassTable is 56.

ClassInfo.PropMask.fClsID: 1 specifies that the **ClsID** field is not set to the file format default and is stored in the ClassInfoExtraDataBlock of the SiteClassInfo.

ClassInfo.PropMask.fDispEvent: 1 specifies that the **DispEvent** field is not set to the file format default and is stored in the ClassInfoExtraDataBlock of SiteClassInfo.

ClassInfo.PropMask.fDefaultProg: 1 specifies that the **DefaultProg** field is not set to the file format default and is stored in the ClassInfoExtraDataBlock of the SiteClassInfo.

ClassInfo.PropMask.fDispidBind: 1 specifies that the **DispidBind** field is not set to the file format default and is stored in the ClassInfoDataBlock of the SiteClassInfo.

ClassInfo.DataBlock.DispidBind: 0x00000000 specifies the **DispID** of the default bindable property, as specified in [MS-OAUT] section 2.2.49.5.2.

ClassInfo.ExtraDataBlock.ClsID: 12 45 02 00 00 00 00 00 C0 00 00 00 00 00 00 46 specifies the CLSID of the RefEdit control in little-endian format. The GUID [MS-DTYP] in standard format is {00024512-0000-0000-C000-000000000046}.

ClassInfo.ExtraDataBlock.DispEvent: 12 1D D2 8B 42 EC CE 11 9E 0D 00 AA 00 60 02 F3 specifies the GUID, in little-endian format, of the source interface as specified in [MS-OAUT] section 2.2.49.8. The GUID [MS-DTYP] in standard format is {8BD21D12-EC42-11CE-9E0D-00AA006002F3}.

ClassInfo.ExtraDataBlock.DefaultProg: 18 45 02 00 00 00 00 00 C0 00 00 00 00 00 00 46 specifies the GUID, in little-endian format, of the default interface as specified in [MS-OAUT] section 2.2.49.8. The GUID [MS-DTYP] in standard format is {00024518-0000-0000-C000-000000000046}.

The following table shows the top-level representation of the OleSiteConcreteControl in a FormControl structure. It displays the **PropMask**, **DataBlock** and **ExtraDataBlock** for this OleSiteConcreteControl.

Offset	Size	Structure	Value
00000094	0028	**G**: OleSiteConcreteControl **- Site**	
00000094	0002	USHORT **- Version**	0x0000
00000096	0002	USHORT **- cbSite**	0x0024
00000098	0004	**H**: SitePropMask **- PropMask**	
0000009C	0010	**I**: SiteDataBlock **- DataBlock**	
000000AC	0010	**J**: SiteExtraDataBlock **- ExtraDataBlock**	

Figure 44: OleSiteConcreteControl structure

Version: 0x0000 specifies the version of the OleSiteConcreteControl.

cbSite: 0x0024 specifies that the sum of the sizes, in bytes, of **SitePropMask**, **SiteDataBlock**, and **SiteExtraDataBlock** in this OleSiteConcreteControl is 36.

The following table shows the properties of the OleSiteConcreteControl that are not set to the file format default. If a bit is set to 1, the value of the corresponding property in the SiteDataBlock or SiteExtraDataBlock is not the file format default and is stored in the file. If a bit is set to zero, the value of the corresponding property is the file format default and is not stored in the file. The Name, ID, ObjectStreamSize, TabIndex, ClsidCacheIndex, and Position properties are not set to the file format default, and only these bits are set to 1.

Offset	Size	Structure	Value
00000098	0004	**H**: SitePropMask **- PropMask**	
00000098	1 bit	BOOL **- fName**	1
00000098	1 bit	BOOL **- fTag**	0
00000098	1 bit	BOOL **- fID**	1

Offset	Size	Structure	Value
00000098	1 bit	BOOL **- fHelpContextID**	0
00000098	1 bit	BOOL **- fBitFlags**	0
00000098	1 bit	BOOL **- fObjectStreamSize**	1
00000098	1 bit	BOOL **- fTabIndex**	1
00000098	1 bit	BOOL **- fClsidCacheIndex**	1
00000098	1 bit	BOOL **- fPosition**	1
00000098	1 bit	BOOL **- fGroupID**	0
00000098	1 bit	BOOL **- Unused1**	0
00000098	1 bit	BOOL **- fControlTipText**	0
00000098	1 bit	BOOL **- fRuntimeLicKey**	0
00000098	1 bit	BOOL **- fControlSource**	0
00000098	1 bit	BOOL **- fRowSource**	0
00000098	17 bits	BOOL **- Unused2**	0

Figure 45: SitePropMask structure

PropMask fields set to zero specify that no property is stored and have been omitted from the following description.

fName: 1 specifies that the Name property is not set to the file format default and is stored in the SiteDataBlock and SiteExtraDataBlock of the OleSiteConcreteControl.

fID: 1 specifies that the ID property is not set to the file format default and is stored in the SiteDataBlock of the OleSiteConcreteControl.

fObjectStreamSize: 1 specifies that the ObjectStreamSize property is not set to the file format default and is stored in the SiteDataBlock of the OleSiteConcreteControl.

fTabIndex: 1 specifies that the TabIndex property is not set to the file format default and is stored in the SiteDataBlock of the OleSiteConcreteControl.

fClsidCacheIndex: 1 specifies that the ClsidCacheIndex property is not set to the file format default and is stored in the SiteDataBlock of the OleSiteConcreteControl.

fPosition: 1 specifies that the Position property is not set to the file format default and is stored in the SiteExtraDataBlock of the OleSiteConcreteControl.

The following table shows the SiteDataBlock. The **DataBlock** stores property values that are 4 bytes or smaller and are not the file format defaults. In this example, ID, ObjectStreamSize, TabIndex, and ClsidCacheIndex are the only properties whose values are stored in the **DataBlock**. For the Name property, the length and compression flag of the Name string are stored in the **DataBlock**, but the Name string itself is stored in the SiteExtraDataBlock.

Offset	Size	Structure	Value
0000009C	0010	**I**: SiteDataBlock **- DataBlock**	
0000009C	0004	CountOfBytesWithCompressionFlag **- NameData**	

Offset	Size	Structure	Value
0000009C	31 bits	ULONG **- cb**	0x00000008
0000009C	1 bit	BOOL **- fCompressed**	1
000000A0	0004	SiteID **- ID**	0x00000001
000000A4	0004	SiteObjectStreamSize **- ObjectStreamSize**	0x00000038
000000A8	0002	SiteTabIndex **- TabIndex**	0x0000
000000AA	0002	SiteClsidCacheIndex **- ClsidCacheIndex**	0x8000

Figure 46: SiteDataBlock structure

NameData.cb: 0x00000008 specifies that the size of the Name string in the SiteExtraDataBlock is 8 bytes after compression.

NameData.fCompressed: 1 specifies that the Name string in the SiteExtraDataBlock is compressed.

ID: 0x00000001 specifies a unique identifier for the embedded control on the form.

ObjectStreamSize: 0x00000038 specifies that the size of the embedded control that is persisted to the Object stream of the UserForm is 56 bytes.

TabIndex: 0x0000 specifies the index of the embedded control in the tab order of the form.

ClsidCacheIndex: 0x8000 specifies that information about the control is specified by the first entry in the **FormSiteData.ClassTable** of the FormControl in which the control is embedded.

The following table shows the SiteExtraDataBlock. For this example, the Name and Position properties are the only properties stored in the SiteExtraDataBlock.

Offset	Size	Structure	Value
000000AC	0010	**J**: SiteExtraDataBlock **- ExtraDataBlock**	
000000AC	0008	SiteNameExtraData **- Name**	
000000AC	0008	Array of bytes **- CompressedString**	RefEdit1
000000B4	0008	SitePosition **- Position**	
000000B4	0008	fmPosition **- SitePosition**	
000000B4	0004	LONG **- Top**	0x00000845
000000B8	0004	LONG **- Left**	0x0000069D

Figure 47: SiteExtraDataBlock structure

Name.CompressedString: "RefEdit1" specifies the compressed string for the Name property.

Position.SitePosition.Top: 0x00000845 specifies that the distance of the top of the control from the top of the form is 2117 **HIMETRIC** units, or 60 points.

Position.SitePosition.Left: 0x0000069D specifies that the distance of the left side of the control from the left side of the form is 1693 HIMETRIC units, or 48 points.

The following table shows the top-level representation of the Object stream in a FormControl. This stream persists the RefEdit control properties. The CommandButton Example illustrates the persistence of an embedded control.

Offset	Size	Structure	Value
00000000	0038	Stream **- ObjectStream**	
00000000	0038	MorphDataControl **- RefEdit**	
00000000	0001	BYTE **- MinorVersion**	0x00
00000001	0001	BYTE **- MajorVersion**	0x02
00000002	0002	USHORT **- cbMorphData**	0x0018
00000004	0008	MorphDataPropMask **- PropMask**	
0000000C	0008	MorphDataDataBlock **- DataBlock**	
00000014	0008	MorphDataExtraDataBlock **- ExtraDataBlock**	
0000001C	0000	MorphDataStreamData **- StreamData**	
0000001C	001C	TextProps **- TextProps**	

Figure 48: ObjectStream structure

3.5 TabStrip

The following example shows a TabStripControl structure. The TabStrip is embedded in a UserForm and has the following properties set:

- Three tabs, which have the Names "Tab1", "Tab2", and "Tab3", respectively.
- The Captions are set to "Tab1", "Tab2", and "Tab3" for the first, second and third tabs, respectively.
- The Accelerators are set to "1", "2", and "3" for the first, second and third tabs, respectively.
- The Tooltip strings are set to "Select Tab1", "Select Tab2", and "Select Tab3" for the first, second and third tabs, respectively.
- The first tab is selected, or the ListIndex property is set to zero.
- The Height and Width properties are set to 114 **points** and 168 points, respectively.

The following table shows the top-level representation of a TabStripControl structure.

Offset	Size	Structure	Value
00000000	00DC	TabStripControl	
00000000	0001	BYTE **- MinorVersion**	0x00
00000001	0001	BYTE **- MajorVersion**	0x02
00000002	0002	USHORT **- cbTabStrip**	0x00B0
00000004	0004	**A**: TabStripPropMask **- PropMask**	
00000008	0020	**B**: TabStripDataBlock **- DataBlock**	
00000028	008C	**C**: TabStripExtraDataBlock **- ExtraDataBlock**	
000000B4	0000	TabStripStreamData **- StreamData**	

Offset	Size	Structure	Value
000000B4	001C	TextProps **- TextProps**	
000000D0	000C	**D**: TabStripTabFlagData **- TabStripTabFlags**	

Figure 49: TabStripControl structure

The following are detailed examples of the **PropMask**, **DataBlock**, **ExtraDataBlock**, and **TabStripTabFlags**. An example of the **TextProps** has been omitted because its structure closely resembles the **CommandButtonControl Example** (section 3.2).

MinorVersion: 0x00 specifies the minor version of the control.

MajorVersion: 0x02 specifies the major version of the control.

cbTabStrip: 0x00B0 specifies the sum of the sizes, in bytes, of **PropMask**, **DataBlock**, and **ExtraDataBlock**.

The following table shows the properties of the TabStripControl that are not set to the file format default. If a bit is set to 1, the corresponding property in the TabStripDataBlock is not the file format default and is stored in the file. If a bit is set to zero, the corresponding property is the file format default and is not stored in the file.

Offset	Size	Structure	Value
00000004	0004	**A**: TabStripPropMask **- PropMask**	
00000004	1 bit	BOOL **- fListIndex**	1
00000004	1 bit	BOOL **- fBackColor**	0
00000004	1 bit	BOOL **- fForeColor**	0
00000004	1 bit	BOOL **- Unused1**	0
00000004	1 bit	BOOL **- fSize**	1
00000004	1 bit	BOOL **- fItems**	1
00000004	1 bit	BOOL **- fMousePointer**	0
00000004	1 bit	BOOL **- Unused2**	0
00000004	1 bit	BOOL **- fTabOrientation**	0
00000004	1 bit	BOOL **- fTabStyle**	0
00000004	1 bit	BOOL **- fMultiRow**	0
00000004	1 bit	BOOL **- fTabFixedWidth**	0
00000004	1 bit	BOOL **- fTabFixedHeight**	0
00000004	1 bit	BOOL **- fTooltips**	0
00000004	1 bit	BOOL **- Unused3**	0
00000004	1 bit	BOOL **- fTipStrings**	1
00000004	1 bit	BOOL **- Unused4**	0
00000004	1 bit	BOOL **- fNames**	1

Offset	Size	Structure	Value
00000004	1 bit	BOOL **- fVariousPropertyBits**	0
00000004	1 bit	BOOL **- fNewVersion**	1
00000004	1 bit	BOOL **- fTabsAllocated**	1
00000004	1 bit	BOOL **- fTags**	1
00000004	1 bit	BOOL **- fTabData**	1
00000004	1 bit	BOOL **- fAccelerator**	1
00000004	1 bit	BOOL **- fMouseIcon**	0
00000004	7 bits	BOOL **- UnusedBits**	0

Figure 50: TabStripPropMask structure

fListIndex: 1 specifies that the ListIndex property is not set to the file format default and is stored in the TabStripDataBlock.

fBackColor: Zero specifies that the value of the BackColor property is the file format default and is not stored in the file.

fForeColor: Zero specifies that the value of the ForeColor property is the file format default and is not stored in the file.

fSize: 1 specifies that the Size property is not set to the file format default and is stored in the TabStripExtraDataBlock.

fItems: 1 specifies that **ExtraDataBlock.Items** and **DataBlock.ItemsSize** both have values and are stored in the TabStripExtraDataBlock and TabStripDataBlock, respectively.

fMousePointer: Zero specifies that the value of the MousePointer property is the file format default and is not stored in the file.

fTabOrientation: Zero specifies that the value of the TabOrientation property is the file format default and is not stored in the file.

fTabStyle: Zero specifies that the value of the TabStyle property is the file format default and is not stored in the file.

fMultiRow: Zero specifies that the value of the MultiRow property is the file format default and is not stored in the file.

fTabFixedWidth: Zero specifies that the value of the TabFixedWidth property is the file format default and is not stored in the file.

fTabFixedHeight: Zero specifies that the value of the TabFixedHeight property is the file format default and is not stored in the file.

fTooltips: Zero specifies that the value of the Tooltips property is the file format default and is not stored in the file.

fTipStrings: 1 specifies that **ExtraDataBlock.TipStrings** and **DataBlock.TipStringsSize** both have values and are stored in the TabStripExtraDataBlock and TabStripDataBlock, respectively.

fNames: 1 specifies that **ExtraDataBlock.TabNames** and **DataBlock.NamesSize** both have values and are stored in the TabStripExtraDataBlock and TabStripDataBlock, respectively.

fVariousPropertyBits: Zero specifies that the value of the VariousPropertyBits property is the file format default and is not stored in the file.

fNewVersion: 1 specifies that the NewVersion property is not set to the file format default.

fTabsAllocated: 1 specifies that the TabsAllocated property is not set to the file format default and is stored in the TabStripDataBlock.

fTags: 1 specifies that **ExtraDataBlock.Tags** and **DataBlock.TagsSize** both have values and are stored in the TabStripExtraDataBlock and TabStripDataBlock, respectively.

fTabData: 1 specifies that the TabData property is not set to the file format default and is stored in the TabStripDataBlock.

fAccelerator: 1 specifies that **ExtraDataBlock.Accelerators** and **DataBlock.AcceleratorsSize** both have values and are stored in the TabStripExtraDataBlock and TabStripDataBlock, respectively.

fMouseIcon: Zero specifies that the value of the MouseIcon property is the file format default and is not stored in the file.

The following table shows the TabStripDataBlock. The **DataBlock** stores property values that are 4 bytes or smaller and are not the file format defaults. In this example, ListIndex, TabsAllocated and TabData are stored in the **DataBlock** because they have a size of 4 bytes or less. For the **Items**, **TipStrings**, **Names**, **Tags**, and **Accelerators** arrays, the size of the arrays is stored in the **DataBlock**. The arrays themselves are larger than 4 bytes and are stored in the TabStripExtraDataBlock.

Offset	Size	Structure	Value
00000008	0020	**B**: TabStripDataBlock **- DataBlock**	
00000008	0004	LONG **- ListIndex**	0x00000000
0000000C	0004	ULONG **- ItemsSize**	0x00000018
00000010	0004	ULONG **- TipStringsSize**	0x00000030
00000014	0004	ULONG **- NamesSize**	0x00000018
00000018	0004	LONG **- TabsAllocated**	0x00000003
0000001C	0004	ULONG **- TagsSize**	0x0000000C
00000020	0004	LONG **- TabData**	0x00000003
00000024	0004	ULONG **- AcceleratorsSize**	0x00000018

Figure 51: TabStripDataBlock structure

ListIndex: 0x00000000 specifies that the ListIndex property is set to zero, or that the first tab is selected.

ItemsSize: 0x00000018 specifies that the size of the **Items** array in the TabStripExtraDataBlock is 24 bytes.

TipStringsSize: 0x00000030 specifies that the size of the **TipStrings** array in the TabStripExtraDataBlock is 48 bytes.

NamesSize: 0x00000018 specifies that the size of the **Names** array in the TabStripExtraDataBlock is 24 bytes.

TabsAllocated: 0x00000003 specifies that the value of the TabsAllocated property is 3, or that three tabs have been inserted since the control was created.

TagsSize: 0x0000000C specifies that the size of the **Tags** array in the TabStripExtraDataBlock is 12 bytes.

TabData: 0x00000003 specifies that the value of the TabData property is 3, or that a TabStripTabFlagData is stored for three tabs in this TabStripControl.

AcceleratorsSize: 0x00000018 specifies that the size of the **Accelerators** array in the TabStripExtraDataBlock is 24 bytes.

The following table shows the TabStripExtraDataBlock. For this example, the Size, Items, TipStrings, Names, Tags and Accelerators properties are stored in the TabStripExtraDataBlock.

Offset	Size	Structure	Value
00000028	008C	**C**: TabStripExtraDataBlock **- ExtraDataBlock**	
00000028	0008	fmSize **- Size**	
00000028	0004	LONG **- Width**	0x00001727
0000002C	0004	LONG **- Height**	0x00000FB5
00000030	0018	Items **- Items**	
00000030	0008	ArrayString **- Item**	
00000030	0004	CountOfCharsWithCompressionFlag **- CountAndCompression**	
00000030	31 bits	ULONG **- cch**	0x00000004
00000030	1 bit	BOOL **- fCompressed**	1
00000034	0004	Array of bytes **- CompressedString**	Tab1
00000038	0008	ArrayString **- Item**	
00000040	0008	ArrayString **- Item**	
00000048	0030	TipStrings **- TipStrings**	
00000048	0010	ArrayString **- Tooltip**	
00000048	0004	CountOfCharsWithCompressionFlag **- CountAndCompression**	
00000048	31 bits	ULONG **- cch**	0x0000000B
00000048	1 bit	BOOL **- fCompressed**	1
0000004C	000B	Array of bytes **- CompressedString**	Select Tab1
00000057	0001	Array of bytes **- Padding**	BD
00000058	0010	ArrayString **- Tooltip**	
00000068	0010	ArrayString **- Tooltip**	
00000078	0018	TabNames **- TabNames**	
00000078	0008	ArrayString **- Name**	

Offset	Size	Structure	Value
00000078	0004	CountOfCharsWithCompressionFlag **- CountAndCompression**	
00000078	31 bits	ULONG **- cch**	0x00000004
00000078	1 bit	BOOL **- fCompressed**	1
0000007C	0004	Array of bytes **- CompressedString**	Tab1
00000080	0008	ArrayString **- Name**	
00000088	0008	ArrayString **- Name**	
00000090	000C	Tags **- Tags**	
00000090	0004	ArrayString **- Tag**	
00000090	0004	CountOfCharsWithCompressionFlag **- CountAndCompression**	
00000090	31 bits	ULONG **- cch**	0x00000000
00000090	1 bit	BOOL **- fCompressed**	0
00000094	0000	Array of WCHAR **- UncompressedString**	
00000094	0004	ArrayString **- Tag**	
00000098	0004	ArrayString **- Tag**	
0000009C	0018	Accelerators **- Accelerators**	
0000009C	0008	ArrayString **- Accelerator**	
0000009C	0004	CountOfCharsWithCompressionFlag **- CountAndCompression**	
0000009C	31 bits	ULONG **- cch**	0x00000001
0000009C	1 bit	BOOL **- fCompressed**	1
000000A0	0001	Array of bytes **- CompressedString**	1
000000A1	0003	Array of bytes **- Padding**	BD BD BD
000000A4	0008	ArrayString **- Accelerator**	
000000AC	0008	ArrayString **- Accelerator**	

Figure 52: TabStripExtraDataBlock structure

Details about **Padding** have been omitted from this example. For details about **Padding**, see **CommandButton Example** (section 3.2). Details about CountOfCharsWithCompressionFlag are provided only once for **Items** and are omitted from the rest of the properties.

Size.Width: 0x00001727 specifies that the width of the TabStripControl is 5927 **HIMETRIC** units, or 168 points.

Size.Height: 0x00000FB5 specifies that the height of the TabStripControl is 4021 HIMETRIC units, or 114 points.

Items: Specifies the array of Caption values for the tabs.

Items.Item: Specifies the Caption property of its respective tab. For the sake of brevity, only the first value in the array is shown.

Items.Item.CountAndCompression.cch: 0x00000004 specifies that the count of characters for the string is 4.

Items.Item.CountAndCompression.fCompressed: 1 specifies that the string is compressed.

Items.Item.CompressedString: "Tab1" specifies the value of the Caption property for the first tab.

TipStrings: Specifies the array of Tooltip values for the tabs.

TipStrings.Tooltip: Specifies the Tooltip property of its respective tab. For the sake of brevity, only the first value in the array is shown.

TipStrings.Tooltip.CompressedString: "Select Tab1" specifies the value of the Tooltip property for the first tab.

TabNames: Specifies the array of Name values for the tabs.

TabNames.Name: Specifies the Name property of its respective tab. For the sake of brevity, only the first value in the array is shown.

TabNames.Name.CompressedString: "Tab1" specifies the value of the Name property for the first tab.

Tags: Specifies the array of Tag values for the tabs.

Tags.Tag: Specifies the Tag property of its respective tab. For the sake of brevity, only the first value in the array is shown.

Tags.Tag.UncompressedString: Specifies that the Tag property of the first tab is empty.

Accelerators: Specifies the array of Accelerator values for the tabs.

Accelerators.Accelerator: Specifies the Accelerator property of its respective tab. For the sake of brevity, only the first value in the array is shown.

Accelerators.Accelerator.CompressedString: 1 specifies the value of the Accelerator property for the first tab.

The following table shows the TabStripTabFlagData. The TabStripTabFlagData contains an array of TabStripTabFlag. The number of elements in the array is the value of the **DataBlock.TabData** property. Each TabStripTabFlag specifies whether the tab is visible and whether it is enabled.

Offset	Size	Structure	Value
000000D0	000C	**D**: TabStripTabFlagData **- TabStripTabFlags**	
000000D0	000C	TabStripTabFlags **- TabStripTabFlags**	
000000D0	0004	TabStripTabFlag **- _dwFlag**	
000000D0	1 bit	BOOL **- fTabVisible**	1
000000D0	1 bit	BOOL **- fTabEnabled**	1
000000D0	30 bits	BOOL **- Unused**	0
000000D0	0004	TabStripTabFlag **- _dwFlag**	
000000D0	0004	TabStripTabFlag **- _dwFlag**	

Figure 53: TabStripTabFlagData structure

TabStripTabFlags: Specifies the array of TabStripTabFlag for the three tabs.

TabStripTabFlags._dwFlag: Specifies the TabStripTabFlag of the first tab.

TabStripTabFlags._dwFlag.fTabVisible: 1 specifies that the first tab is visible.

TabStripTabFlags._dwFlag.fTabEnabled: 1 specifies that the first tab is enabled.

3.6 Property Bag Format

The following is an example of persistence to a **property bag**, as specified in section 2.1.1.1. In this example, a TabStrip control is persisted as an embedded control within an Office Open XML SpreadsheetML package, which is described in [ECMA-376] part 1, section 8.4.

The Office Open XML document relationship, as described in [ECMA-376] part 1, section 9.2, and the package parts, as described in [ECMA-376] part 1, section 8.1, that are shown in the example are not required or specified by Office Forms. [ECMA-376] part 1, section 15.2.9, describes embedded controls in an Office Open XML document. The only parts of the example that are controlled by Office Forms are the name of each property and the type and format of each property value.

The persistence of the data structures for this TabStrip control can be applied to other control types.

The following text illustrates a TabStrip persisted as an embedded control within an Office Open XML document**.** It has the following properties set:

- Three tabs.
- The Captions are set to "Tab1", "Tab2", and "Tab3" for the first, second, and third tabs, respectively.
- The Accelerators are set to "1", "2", and "3" for the first, second, and third tabs, respectively.
- The Tooltip strings are set to "Select Tab1", "Select Tab2", and "Select Tab3" for the first, second, and third tabs, respectively.
- The Tag of each tab is an empty string.
- The TabsAllocated value is set to 3.
- A TabStripTabFlag is set for each of the three tabs.
- A TabStripTabFlagData that is visible and enabled is set for each tab.
- The first tab is selected, which means that the ListIndex property is set to zero.
- The BackColor is set to 0x80000005.
- The ForeColor is set to 0x80000008.
- The Size is set to a **Width** of 441.75 **points** and a **Height** of 208.5 points.
- The MouseIcon property is set to a picture.<20>
- The NewVersion is set to TRUE.
- The FontName is set to "Calibri".
- The FontHeight is set to 11.25.
- The FontCharSet is set to zero.

- The FontPitchAndFamily is set to an fmFontPitch meaning that the characters have varying widths, and an fmFontFamily meaning that the font has variable stroke width (a proportional font) and does not use serifs.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<ax:ocx ax:classid="{EAE50EB0-4A62-11CE-BED6-00AA00611080}"
ax:persistence="persistPropertyBag"
xmlns:ax="http://schemas.microsoft.com/office/2006/activeX"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships">
    <ax:ocxPr ax:name="ListIndex" ax:value="0"/>
    <ax:ocxPr ax:name="BackColor" ax:value="2147483653"/>
    <ax:ocxPr ax:name="ForeColor" ax:value="2147483656"/>
    <ax:ocxPr ax:name="Size" ax:value="15584;7355"/>
    <ax:ocxPr ax:name="Items" ax:value="Tab1;Tab2;Tab3;"/>
    <ax:ocxPr ax:name="MousePointer" ax:value="99"/>
    <ax:ocxPr ax:name="TipStrings" ax:value="Select Tab 1;Select Tab 2;Select Tab 3;"/>
    <ax:ocxPr ax:name="Names" ax:value="Tab1;Tab2;Tab3;"/>
    <ax:ocxPr ax:name="NewVersion" ax:value="-1"/>
    <ax:ocxPr ax:name="TabsAllocated" ax:value="3"/>
    <ax:ocxPr ax:name="Tags" ax:value=";;;"/>
    <ax:ocxPr ax:name="TabData" ax:value="3"/>
    <ax:ocxPr ax:name="Accelerator" ax:value="1;2;3;"/>
    <ax:ocxPr ax:name="MouseIcon">
        <ax:picture r:id="rId1"/>
    </ax:ocxPr>
    <ax:ocxPr ax:name="FontName" ax:value="Calibri"/>
    <ax:ocxPr ax:name="FontHeight" ax:value="225"/>
    <ax:ocxPr ax:name="FontCharSet" ax:value="0"/>
    <ax:ocxPr ax:name="FontPitchAndFamily" ax:value="34"/>
    <ax:ocxPr ax:name="TabState" ax:value="3;3;3"/>
</ax:ocx>
```

3.6.1 TabStrip and TextProps Properties

ListIndex: Zero specifies that the ListIndex is set to zero, or that the current tab of the TabStrip is the first tab.

BackColor: 2147483653 specifies that the BackColor is set to 0x80000005, or that the **OleColorType** of the OLE_COLOR is SystemPalette and the entry in the **system palette** is set to 5.

ForeColor: 2147483656 specifies that the ForeColor is set to 0x80000008, or that the **OleColorType** of the OLE_COLOR is SystemPalette and the entry in the system palette is set to 8.

Size: "15584;7355" specifies a point that represents the Size of the control.

15584 specifies that the **Width** of the TabStrip is set to 15584 **HIMETRIC** units, or 441.75 **points**.

7355 specifies that the **Height** of the TabStrip is set to 7355 HIMETRIC units, or 208.5 points.

Items: "Tab1;Tab2;Tab3;" specifies the list of Caption values for the tabs. "Tab1" appears on the first tab, "Tab2" appears on the second tab, and "Tab3" appears on the third tab.

MousePointer: 99 specifies that a custom MousePointer is specified by **MouseIcon**.

TipStrings: "Select Tab 1;Select Tab 2;Select Tab3;" specifies the list of Tooltip values for the tabs. "Select Tab 1" is the Tooltip for the first tab, "Select Tab 2" is the Tooltip for the second tab, and "Select Tab 3" is the Tooltip for the third tab.

Names: "Tab1;Tab2;Tab3;" specifies the list of Name values for the tabs. "Tab1" is the Name of the first tab, "Tab2" is the Name of the second tab, and "Tab3" is the Name of the third tab.

NewVersion: -1 specifies that NewVersion is set to TRUE.

TabsAllocated: 3 specifies that the TabsAllocated value is set to 3, or that three tabs have been inserted since the control was created.

Tags: ";;;" specifies that the value of the Tag property for each tab is an empty string.

TabData: 3 specifies that the TabData is 3, or that a TabStripTabFlag is stored for each of the three tabs of the TabStrip.

Accelerator: "1;2;3;" specifies the list of **Unicode** character Accelerator values for the tabs. 1 specifies the **accelerator key** for the first tab, 2 specifies the accelerator key for the second tab, and 3 specifies the accelerator key for the third tab.

MouseIcon: Picture properties are persisted as specified by the client application (see section 2.1.1.1.3.4). In this example, "rId1" specifies that rId1 maps to the location of the picture for the custom MouseIcon, but that is not determined by Office Forms. The following XML from the Relationships part of the SpreadsheetML package specifies the location and format of the stored binary value. [ECMA-376] part 1, section 15.2.9, describes embedded controls in an Office Open XML document, and [ECMA-376] part 1, section 15.2.10.

```
<Relationships xmlns="http://schemas.openxmlformats.org/package/2006/relationships">
    <Relationship Id="rId1"
Type="http://schemas.microsoft.com/office/2006/relationships/activeXControlBinary"
Target="activeX1.bin"/>
</Relationships>
```

The file "activeX1.bin" holds the binary data of the image.

FontName: "Calibri" specifies that the FontName used by the TabStrip is Calibri.

FontHeight: 225 specifies that the FontHeight of the TabStrip is 225 **twips**, or 11.25 points.

FontCharSet: Zero specifies that the FontCharSet is set to zero, or that the **character set** used by the TabStrip is set to zero or ANSI_CHARSET code page 1252.

FontPitchAndFamily: 34 specifies that the FontPitchAndFamily in binary format is set to 00100010. The fmFontPitch is set to 0010 or 2, meaning that the characters have varying widths, and the fmFontFamily is set to 0010 or 2, meaning that the font has variable stroke width (proportional) and does not use serifs.

TabState: 3;3;3 specifies the list of TabStripTabFlagData for the tabs. 3 specifies that each tab is both visible and enabled.

The following TabStrip properties are not listed. The values are the file format defaults for TabStrip.

TabOrientation: The default TabOrientation specifies that the tabs display above the rest of the control.

TabStyle: The default TabStyle specifies that the tabs are displayed with a tab style, instead of with a toggle button or not at all.

MultiRow: The default MultiRow specifies that the tabs display in one row.

TabFixedWidth: The default TabFixedWidth specifies that the client application determines the width.

TabFixedHeight: The default TabFixedHeight specifies that the client application determines the height.

VariousPropertyBits: For a TabStrip, the default VariousPropertyBits specifies 27, or that Reserved1, Enabled, BackStyle, and Reserved2 are set to TRUE.

The following properties of TextProps are not listed. The values are the file format defaults.

FontEffects: The default FontEffects is zero, no effects.

ParagraphAlign: The default ParagraphAlign is 1, the text is aligned to the left the control.

FontWeight: The default FontWeight is 400.

4 Security Considerations

None.

5 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include updates to those products.

- Microsoft Office 97
- Microsoft Office 2000
- Microsoft Office 2003
- the 2007 Microsoft Office system
- Microsoft Office 2010 suites
- Microsoft Office 2013
- Microsoft Office 2016
- Microsoft Office 2019
- Microsoft Office 2021
- Microsoft Office LTSC 2024

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms "SHOULD" or "SHOULD NOT" implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term "MAY" implies that the product does not follow the prescription.

<1> Section 1.5: This persistence format provides interoperability with applications that create or read documents conforming to this structure, including Microsoft Word 97, Microsoft Word 2000, Microsoft Office Word 2003, Microsoft Excel 97, Microsoft Excel 2000, Microsoft Office Excel 2003, Microsoft PowerPoint 97, Microsoft PowerPoint 2000, and Microsoft Office PowerPoint 2003. This persistence format can also be used for interoperability with Microsoft Office Word 2007, Microsoft Word 2010, Microsoft Word 2013 and later, Microsoft Office Excel 2007, Microsoft Excel 2010, Microsoft Excel 2013 and later, Microsoft Office PowerPoint 2007, Microsoft PowerPoint 2010, or Microsoft PowerPoint 2013 and later when compatibility with these listed products is a primary concern.

<2> Section 2.5.10: Office Forms can store a caption in a FormControl, but UserForm controls viewed in Microsoft Visual Basic for Applications 5.0 (VBA 5.0) do not use it. Instead, VBA 5.0 stores the caption of a UserForm control in the **VBFrame stream**, as described in [MS-OVBA] section 2.3.5.

<3> Section 2.5.19: Office Forms displays the full physical size for all controls, but the stored value of **DisplayedSize** in a form does not include the window borders and is therefore smaller than the size actually displayed.

<4> Section 2.5.20.1: ComboBox controls with the Style property in the Properties Window of the designer set to "0 - fmStyleDropDownCombo" have a **DisplayStyle** of **fmDisplayStyleCombo**.

<5> Section 2.5.20.1: ComboBox controls with the Style property in the Properties Window of the designer set to "2 - fmStyleDropDownList" have a **DisplayStyle** of **fmDisplayStyleDropList**.

<6> Section 2.5.22: The object model for Office Forms has a hidden property on the TextBox control called "DropButtonStyle". It has no effect on the control, except that its value is part of the file format.

<7> Section 2.5.43: The object model for Office Forms has a hidden property on the ListBox control called "ListWidth". It has no effect on the control, except that its value is part of the file format.

<8> Section 2.5.50: Values greater than zero and less than 256 that are set through the Office Forms Object Model are persisted. Office Forms treats values that are not in the fmMousePointer enumeration as the file format default.

<9> Section 2.5.52: The object model for Office Forms has a hidden property on the CheckBox, OptionButton, and ToggleButton controls called "MultiSelect". It has no effect on these controls, except that its value is part of the file format.

<10> Section 2.5.67: Office Forms uses the term "Value" when referring to the Position property in ScrollBar and SpinButton controls. The numeric Position property has been documented as separate from Value to distinguish it from controls for which the Value property is a string.

<11> Section 2.5.82: Office Forms treats values less than 142, that is, less than 4 **points**, in the same way as a value of zero.

<12> Section 2.5.83: Office Forms treats values less than 142, that is, less than 4 points, in the same way as a value of zero.

<13> Section 2.5.88: Office Forms preserves the value of this property, but its value and usage are controlled by the user.

<14> Section 2.5.95: Office Forms uses the term "Value" when referring to the Position property in ScrollBar and SpinButton controls. The numeric Position property has been documented as separate from Value to distinguish it from controls for which the Value property is a string. Office Forms also uses "Value" in TabStrip controls to refer to the ListIndex property, which has been documented separately for the same reason.

<15> Section 2.5.96.1: Office Forms displays the two values for the **Alignment** property as "0 - fmAlignmentLeft" and "1 - fmAlignmentRight" in the Properties Window of the designer. However, the file format specifies that **VariousPropertyBits.Alignment** is set to 1 for "0 - fmAlignmentLeft" and set to zero for "1 - fmAlignmentRight".

<16> Section 2.5.96.1: The **Editable** property of a ComboBox control is set to 1 when it is persisted with the DisplayStyle property set to **fmDisplayStyleCombo**. The **Editable** property is not set to zero when the control is persisted with the DisplayStyle property set to **fmDisplayStyleDropList**. Instead, it retains the same value for the **Editable** property as the value it had the last time it was persisted. Applications make requests to Office Forms controls to **persist** themselves at times other than when the user chooses to save a document, so the **Editable** property can be set to 1, even if the implementer changes the Style property of a new ComboBox to "2 - fmStyleDropDownList" in the Properties Window of the designer before saving.

<17> Section 2.5.96.1: Only the ComboBox, ListBox, and TextBox controls enable a user to directly manipulate the **IMEMode** property. However, other controls adjust the value of this property in response to WM_IME_NOTIFY messages.

<18> Section 2.5.96.1: The object model for Office Forms has a hidden Boolean property on all MorphDataControl-based controls called "BordersSuppress". It has no effect on the control, except that its value is part of the file format.

<19> Section 3.2: The picture is up_l.cur, a cursor that can be found in the Cursors directory of the system directory on a Windows Vista system.

<20> Section 3.6: The picture is arrow_rm.cur, a cursor that can be found in the Cursors directory of the system directory on a Windows Vista system.

6 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Description	Revision class
1.5 Applicability Statement	Clarified product behavior for applicability statement.	Minor
2.2.5.1 MorphDataControl	Added optional to description of rgColumnInfo field.	Minor
5 Appendix A: Product Behavior	Updated list of supported products.	Major

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