# [MS-PROPSTORE]:

# Property Store Binary File Format

**Intellectual Property Rights Notice for Open Specifications Documentation**

- **Technical Documentation.** Microsoft publishes Open Specifications documentation ("this documentation") for protocols, file formats, data portability, computer languages, and standards support. Additionally, overview documents cover inter-protocol relationships and interactions.

- **Copyrights**. This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you can make copies of it in order to develop implementations of the technologies that are described in this documentation and can distribute portions of it in your implementations that use these technologies or in your documentation as necessary to properly document the implementation. You can also distribute in your implementation, with or without modification, any schemas, IDLs, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications documentation.

- **No Trade Secrets**. Microsoft does not claim any trade secret rights in this documentation.

- **Patents**. Microsoft has patents that might cover your implementations of the technologies described in the Open Specifications documentation. Neither this notice nor Microsoft's delivery of this documentation grants any licenses under those patents or any other Microsoft patents. However, a given Open Specifications document might be covered by the Microsoft [Open Specifications Promise](#) or the [Microsoft Community Promise](#). If you would prefer a written license, or if the technologies described in this documentation are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting [iplg@microsoft.com](mailto:iplg@microsoft.com).

- **Trademarks**. The names of companies and products contained in this documentation might be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit [www.microsoft.com/trademarks](http://www.microsoft.com/trademarks).

- **Fictitious Names**. The example companies, organizations, products, domain names, email addresses, logos, people, places, and events that are depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

**Reservation of Rights**. All other rights are reserved, and this notice does not grant any rights other than as specifically described above, whether by implication, estoppel, or otherwise.

**Tools**. The Open Specifications documentation does not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments, you are free to take advantage of them. Certain Open Specifications documents are intended for use in conjunction with publicly available standards specifications and network programming art and, as such, assume that the reader either is familiar with the aforementioned material or has immediate access to it.

## Revision Summary

| Date | Revision History | Revision Class | Comments |
|---|---|---|---|
| 7/16/2010 | 1.0 | New | First Release. |
| 8/27/2010 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 10/8/2010 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 11/19/2010 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 1/7/2011 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 2/11/2011 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 3/25/2011 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 5/6/2011 | 1.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 6/17/2011 | 1.1 | Minor | Clarified the meaning of the technical content. |
| 9/23/2011 | 1.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 12/16/2011 | 1.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 3/30/2012 | 1.1 | None | No changes to the meaning, language, or formatting of the technical content. |
| 7/12/2012 | 1.2 | Minor | Clarified the meaning of the technical content. |
| 10/25/2012 | 1.2 | None | No changes to the meaning, language, or formatting of the technical content. |
| 1/31/2013 | 1.2 | None | No changes to the meaning, language, or formatting of the technical content. |
| 8/8/2013 | 2.0 | Major | Updated and revised the technical content. |
| 11/14/2013 | 2.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 2/13/2014 | 2.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 5/15/2014 | 2.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 6/30/2015 | 3.0 | Major | Significantly changed the technical content. |
| 10/16/2015 | 3.0 | None | No changes to the meaning, language, or formatting of the technical content. |
| 7/14/2016 | 3.0 | None | No changes to the meaning, language, or formatting of the |

| Date | Revision History | Revision Class | Comments |
|------|------------------|----------------|----------|
|      |                  |                | technical content. |

# Table of Contents

# 1 Introduction

This document specifies the Microsoft Property Store Binary File Format. This file format is a persistence format for a set of properties.  Implementers can use this file format to store a set of properties in a file or within another structure.

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:

**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] must be used for generating the **GUID**. See also universally unique identifier (UUID).

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

**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).

**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.

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

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

[MS-SHLLINK] Microsoft Corporation, "Shell Link (.LNK) Binary File Format".

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

### 1.2.2 Informative References

None.

## 1.3 Overview

This structure provides a compact way to serialize one or more property sets. Each property set consists of a property set identifier and one or more property values. Each property value consists of a unique property name and an associated value. Each property name can be either an unsigned integer or, in the case of a special property set identifier, a **Unicode** string.

This structure does not specify the semantics of properties or the assignment of property set identifiers or property names.

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

## 1.4 Relationship to Protocols and Other Structures

This structure is used by the Shell Link (.LNK) Binary File Format, as specified in [MS-SHLLINK].

## 1.5 Applicability Statement

This document specifies a persistence format for one or more sets of property identifiers and associated property values. This persistence format is applicable when each property set can be identified by a **globally unique identifier (GUID)**, and when each property within a property set can be identified by an unsigned integer or a Unicode string name and can be persisted as a TypedPropertyValue structure, as specified in [MS-OLEPS] section 2.15.

## 1.6 Versioning and Localization

None.

## 1.7 Vendor-Extensible Fields

Implementers are free to define new **Format ID**s within the Serialized Property Storage structure, as defined in section 2.2, and to define new property identifiers within a Serialized Property Value structure, as defined in section 2.3.
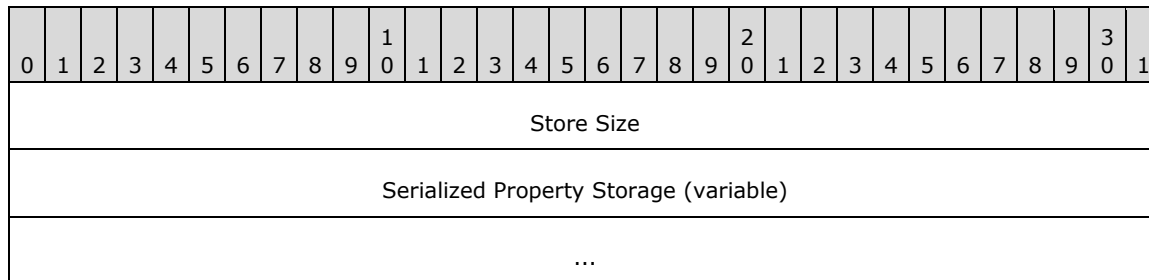
# 2 Structures

This document references commonly used data types as defined in [MS-DTYP].

Unless otherwise qualified, instances of **GUID** in this section refer to [MS-DTYP] section 2.3.4.

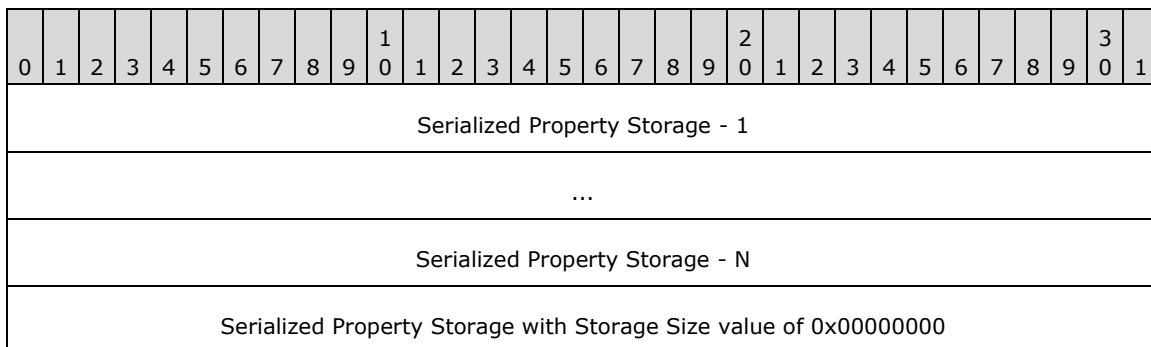## 2.1 Serialized Property Store

The Property Store Binary File Format is a sequence of Serialized Property Storage structures. The sequence MUST be terminated by a Serialized Property Storage structure that specifies 0x00000000 for the **Storage Size** field.
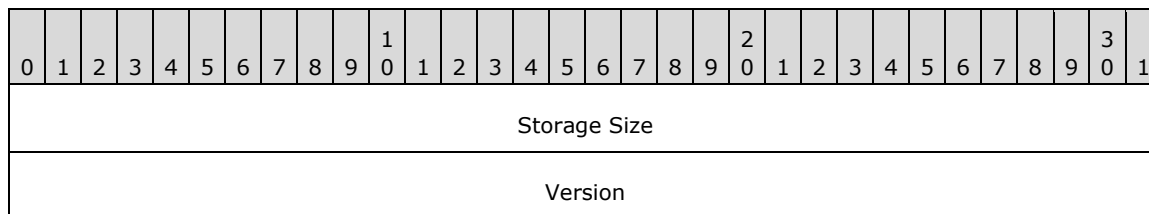
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Store Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serialized Property Storage (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Store Size (4 bytes):** An unsigned integer that specifies the total size, in bytes, of this structure, excluding the size of this field.

**Serialized Property Storage (variable):** A sequence of one or more Serialized Property Storage structures, as specified in section 2.2.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serialized Property Storage - 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serialized Property Storage - N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serialized Property Storage with Storage Size value of 0x00000000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## 2.2 Serialized Property Storage

The Serialized Property Storage structure is a sequence of Serialized Property Value structures.  The sequence MUST be terminated by a Serialized Property Value structure that specifies 0x00000000 for the **Value Size** field.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Storage Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Version | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Format ID (16 bytes) |
|---|
| ... |
| ... |
| Serialized Property Value (variable) |
| ... |

**Storage Size (4 bytes):** An unsigned integer that specifies the total size, in bytes, of this structure. It MUST be 0x00000000 if this is the last Serialized Property Storage in the enclosing Serialized Property Store.

**Version (4 bytes):** Has to be equal to 0x53505331.

**Format ID (16 bytes):** A GUID that specifies the semantics and expected usage of the properties contained in this Serialized Property Storage structure. It MUST be unique in the set of serialized property storage structures.

**Serialized Property Value (variable):** A sequence of one or more property values. If the **Format ID** field is equal to the GUID {D5CDD505-2E9C-101B-9397-08002B2CF9AE}, then all values in the sequence MUST be Serialized Property Value (String Name) structures, as specified in section 2.3.1; otherwise, all values MUST be Serialized Property Value (Integer Name) structures, as specified in section 2.3.2. The last Serialized Property Value in the sequence MUST specify 0x00000 for the **Value Size**.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serialized Property Value - 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serialized Property Value - N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serialized Property Value with Value Size of 0x00000000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## 2.3   Serialized Property Value

There are two types of Serialized Property Value structures: Serialized Property Value (String Name) structures and Serialized Property Value (Integer Name) structures.

### 2.3.1   Serialized Property Value (String Name)

The Serialized Property Value (String Name) structure specifies a single property within a Serialized Property Storage structure, where the property is identified by a unique Unicode string.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Value Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reserved | | | | | | | | | Name (variable) | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value (variable) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Value Size (4 bytes):** An unsigned integer that specifies the total size, in bytes, of this structure. It MUST be 0x00000000 if this is the last The Serialized Property Value in the enclosing Serialized Property Storage structure.

**Name Size (4 bytes):** An unsigned integer that specifies the size, in bytes, of the **Name** field, including the null-terminating character.

**Reserved (1 byte):** Has to be 0x00.

**Name (variable):** A null-terminated Unicode string that specifies the identity of the property. It has to be unique within the enclosing Serialized Property Storage structure.

**Value (variable):** A TypedPropertyValue structure, as specified in [MS-OLEPS] section 2.15.

### 2.3.2 Serialized Property Value (Integer Name)

The Serialized Property Value (Integer Name) structure specifies a single property within a Serialized Property Storage structure, where the property is identified by a unique unsigned integer.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Value Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Id | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reserved | | | | | | | | | Value (variable) | | | | | | | | | | | | | | | | | | | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Value Size (4 bytes):** An unsigned integer that specifies the total size, in bytes, of this structure. It MUST be 0x00000000 if this is the last Serialized Property Value in the enclosing Serialized Property Storage structure.

**Id (4 bytes):** An unsigned integer that specifies the identity of the property. It MUST be unique within the enclosing Serialized Property Storage structure.

**Reserved (1 byte):** MUST be 0x00.

**Value (variable):** A TypedPropertyValue structure, as specified in [MS-OLEPS] section 2.15.

# 3 Structure Examples

None.

# 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 released service packs.

- Windows Vista operating system

- Windows Server 2008 operating system

- Windows 7 operating system

- Windows Server 2008 R2 operating system

- Windows 8 operating system

- Windows Server 2012 operating system

- Windows 8.1 operating system

- Windows Server 2012 R2 operating system

- Windows 10 operating system

- Windows Server 2016 operating system

Exceptions, if any, are noted below. If a service pack or Quick Fix Engineering (QFE) number appears with the product version, behavior changed in that service pack or QFE. The new behavior also applies to subsequent service packs of the product 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.

# 6 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

*[MS-PROPSTORE] - v20160714*
*Property Store Binary File Format*
*Copyright © 2016 Microsoft Corporation*
*Release: July 14, 2016*

# 7 Index