

[MS-PROPSTORE-Diff]:

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.
- **License Programs.** To see all of the protocols in scope under a specific license program and the associated patents, visit the [Patent Map](#).
- **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.
- **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.

Support. For questions and support, please contact dochelp@microsoft.com.

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.

Date	Revision History	Revision Class	Comments
7/14/2016	3.0	None	No changes to the meaning, language, or formatting of the technical content.
6/1/2017	3.0	None	No changes to the meaning, language, or formatting of the technical content.
9/15/2017	4.0	Major	Significantly changed the technical content.
9/12/2018	5.0	Major	Significantly changed the technical content.
4/7/2021	6.0	Major	Significantly changed the technical content.
6/25/2021	7.0	Major	Significantly changed the technical content.
4/23/2024	8.0	Major	Significantly changed the technical content.

Table of Contents

1	Introduction	5
1.1	Glossary	5
1.2	References	5
1.2.1	(Updated Section) Normative References	5
1.2.2	Informative References	5
1.3	Overview	6
1.4	Relationship to Protocols and Other Structures	6
1.5	Applicability Statement	6
1.6	Versioning and Localization	6
1.7	Vendor-Extensible Fields	6
2	Structures	7
2.1	Serialized Property Store	7
2.2	Serialized Property Storage	7
2.3	Serialized Property Value	8
2.3.1	Serialized Property Value (String Name)	8
2.3.2	Serialized Property Value (Integer Name)	9
3	Structure Examples	10
4	Security Considerations	11
5	(Updated Section) Appendix A: Product Behavior	12
6	Change Tracking	13
7	Index	14

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 (Updated Section) 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, <https://www.rfc-editor.org/rfc/info/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 IDs** 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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Storage Size																															
Version																															

Format ID
...
...
...
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 0x000000 for the **Value Size**.

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
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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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 (Updated Section) 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.

- 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
- Windows Server operating system
- Windows Server 2019 operating system
- Windows Server 2022 operating system
- Windows 11 operating system
- Windows Server 2025 operating system

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.

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
5 Appendix A: Product Behavior	Added Windows Server 2025 to the list of applicable products.	Major

7 Index

A

Applicability 6

C

Change tracking 13

Common data types and fields 7

D

Data types and fields - common 7

Details

 common data types and fields 7

E

Examples 10

F

Fields - vendor-extensible 6

G

Glossary 5

I

Implementer - security considerations 11

Informative references 5

Introduction 5

L

Localization 6

N

Normative references 5

O

Overview (synopsis) 6

P

Product behavior 12

R

References 5

 informative 5

 normative 5

Relationship to other protocols 6

Relationship to protocols and other structures 6

S

Security - implementer considerations 11

Serialized Property Value structures 8

Serialized_Property_Storage packet 7

Serialized_Property_Store packet 7
Serialized_Property_Value_Integer_Name packet 9
Serialized_Property_Value_String_Name packet 8
Structures 7
 overview 7

T

Tracking changes 13

V

Vendor-extensible fields 6
Versioning 6