

[MS-XWDSTRUCTDOC]: Web Distributed Authoring and Versioning (WebDAV) Extensions for Structured Documents

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Revision Summary

Date	Revision History	Revision Class	Comments
12/03/2008	1.0		Initial Release.
04/10/2009	2.0		Deprecated for Exchange 2010.
07/15/2009	3.0	Major	Changes made for template compliance.
11/04/2009	3.1.0	Minor	Updated the technical content.
02/10/2010	4.0.0	Major	Updated and revised the technical content.
05/05/2010	4.0.1	Editorial	Revised and edited the technical content.
08/04/2010	4.1	Minor	Clarified the meaning of the technical content.
11/03/2010	4.1	No change	No changes to the meaning, language, or formatting of the technical content.
03/18/2011	4.1	No change	No changes to the meaning, language, and formatting of the technical content.
08/05/2011	4.1	No change	No changes to the meaning, language, or formatting of the technical content.
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07/16/2012	4.1	No change	No changes to the meaning, language, or formatting of the technical content.
10/08/2012	4.2	Minor	Clarified the meaning of the technical content.
02/11/2013	4.2	No change	No changes to the meaning, language, or formatting of the technical content.

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1 Introduction

The Web Distributed Authoring and Versioning (WebDAV) Extensions for Structured Documents extend the Web Distributed Authoring and Versioning (WebDAV) protocol to allow for creation and manipulation of [structured documents](#). These extensions allow clients to retrieve, insert, change, and remove individual pieces of structured documents on the server.

Sections 1.8, 2, and 3 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in RFC 2119. Sections 1.5 and 1.9 are also normative but cannot contain those terms. All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [\[MS-OXGLOS\]](#):

header
structured document
Uniform Resource Identifier (URI)
Uniform Resource Locator (URL)
Web Distributed Authoring and Versioning Protocol (WebDAV)
WebDAV client
WebDAV server

The following terms are specific to this document:

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

1.2 References

References to Microsoft Open Specifications documentation do not include a publishing year because links are to the latest version of the technical documents, which are updated frequently. References to other documents include a publishing year when one is available.

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. Please check the archive site, <http://msdn2.microsoft.com/en-us/library/E4BD6494-06AD-4aed-9823-445E921C9624>, as an additional source.

[MS-OXCDATA] Microsoft Corporation, "[Data Structures](#)".

[MS-OXCMMSG] Microsoft Corporation, "[Message and Attachment Object Protocol](#)".

[MS-OXPROPS] Microsoft Corporation, "[Exchange Server Protocols Master Property List](#)".

[MS-OXSHARE] Microsoft Corporation, "[Sharing Message Object Protocol](#)".

[MS-WDVSE] Microsoft Corporation, "[Web Distributed Authoring and Versioning \(WebDAV\) Protocol: Server Extensions](#)".

[MS-XWDSEARCH] Microsoft Corporation, "[Web Distributed Authoring and Versioning \(WebDAV\) Extensions for Search](#)".

[RFC2068] Fielding, R., Gettys, J., Mogul, J., et al., "Hypertext Transfer Protocol -- HTTP/1.1", RFC 2068, January 1997, <http://www.ietf.org/rfc/rfc2068.txt>

[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>

[RFC2518] Goland, Y., Whitehead, E., Faizi, A., et al., "HTTP Extensions for Distributed Authoring - WebDAV", RFC 2518, February 1999, <http://www.ietf.org/rfc/rfc2518.txt>

1.2.2 Informative References

[MSDN-STIS] Microsoft Corporation, "About Structured Storage", <http://msdn.microsoft.com/en-us/library/aa378734.aspx>

[MS-OXGLOS] Microsoft Corporation, "[Exchange Server Protocols Master Glossary](#)".

[MS-OXPROTO] Microsoft Corporation, "[Exchange Server Protocols System Overview](#)".

[MS-XWDEXT] Microsoft Corporation, "[Web Distributed Authoring and Versioning \(WebDAV\) Core Extensions](#)".

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000, <http://www.ietf.org/rfc/rfc2818.txt>

1.3 Overview

The WebDAV Extensions for Structured Documents allow servers to implement structured storage and make [structured documents](#) available to [WebDAV clients](#). These extensions also allow clients to create and manipulate structured documents. For more information about structured storage, see [\[MSDN-STIS\]](#).

The WebDAV Extensions for Structured Documents provide the following extensions to the HTTP Extensions for Distributed Authoring – WebDAV, as described in [\[RFC2518\]](#):

- A property to indicate the default document within a structured document.
- A new value for the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3) that indicates that a resource is a structured document.
- A new value for **PidNameContentClass** ([\[MS-OXCMSG\]](#) section 2.2.1.48) that indicates that a resource is a structured document.
- Extensions to the **PROPFIND**, **SEARCH**, **GET**, **PUT**, **MKCOL** and **MOVE** methods to work with structured documents.

1.4 Relationship to Other Protocols

The WebDAV Extensions for Structured Documents rely on [\[MS-XWDEXT\]](#), [\[RFC2518\]](#), and [\[RFC2068\]](#). They also rely on [\[RFC2818\]](#) for data protection services.

All properties are listed in [\[MS-OXPROPS\]](#) and are formatted as described in [\[MS-OXCDATA\]](#) for use with [WebDAV](#).

For conceptual background information and overviews of the relationships and interactions between this and other protocols, see [\[MS-OXPROTO\]](#).

1.5 Prerequisites/Preconditions

The WebDAV Extensions for Structured Documents require a [WebDAV server](#) as described in [\[RFC2518\]](#). These extensions also require that [WebDAV clients](#) have a [URL](#) that points to the WebDAV server.

1.6 Applicability Statement

The WebDAV Extensions for Structured Documents can be used to create and manipulate [structured documents](#) on a [WebDAV server](#). They can also be used to retrieve and manipulate individual pieces of a structured document without transferring and processing the entire document.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

2 Messages

2.1 Transport

The WebDAV Extensions for Structured Documents use the transport mechanisms specified in [\[RFC2518\]](#).

2.2 Message Syntax

2.2.1 Properties

2.2.1.1 PidTagTemporaryDefaultDocument

DAV property name: **DAV:defaultdocument**

Data type: **PtypString** ([\[MS-OXCDATA\]](#) section 2.11.1.6)

The **PidTagTemporaryDefaultDocument** property ([\[MS-OXPROPS\]](#) section [2.1156](#)) indicates the relative [Uniform Resource Identifier \(URI\)](#) of the default document contained in the [structured document](#). The URI MUST be relative to the structured document. Clients can use this property to retrieve or set the default document URI.

2.2.1.2 PidNameDavResourceType

The WebDAV Extensions for Structured Documents provide a new value for the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3). This value is "<DAV:structureddocument/>". If this value is present in the **PidNameDavResourceType** property on a resource, then that resource is a [structured document](#).

2.2.1.3 PidNameContentClass

The WebDAV Extensions for Structured Documents provide a new value for the **PidNameContentClass** property ([\[MS-OXCMSG\]](#) section 2.2.1.48). This value is "urn:content-classes:structureddocument". If the **PidNameContentClass** property is set to this value on a resource, then that resource is a [structured document](#).

3 Protocol Details

3.1 Client Details

3.1.1 Abstract Data Model

None.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

None.

3.1.5 Message Processing Events and Sequencing Rules

The following sections specify extensions to the existing [WebDAV](#) methods specified in [\[RFC2518\]](#). These methods MUST be processed as specified in [\[RFC2518\]](#) except for the cases specified below.

3.1.5.1 PidTagTemporaryDefaultDocument

Clients SHOULD set the **PidTagTemporaryDefaultDocument** property (section [2.2.1.1](#)) when sending a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, to the server to create a [structured document](#), as specified in section [3.1.5.4](#). Clients MUST set this property when sending a **PROPPATCH** method request, as specified in [\[RFC2518\]](#) section 8.2, to the server to change the default document of a structured document.

3.1.5.2 PidNameDavResourceType

Clients MUST set the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3) to "<DAV:structureddocument/>" when sending a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, to the server to create a [structured document](#), as specified in section [3.1.5.4](#).

3.1.5.3 PidNameContentClass

Clients SHOULD set the **PidNameContentClass** property ([\[MS-OXCMSG\]](#) section 2.2.1.48) to "urn:content-classes:structureddocument" when sending a **MKCOL** method request to the server to create a [structured document](#), as specified in section [3.1.5.4](#).

3.1.5.4 MKCOL Method

When sending a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, clients MUST include an XML body with a **propertyupdate** element, as specified in [\[RFC2518\]](#) section 12.13. The **propertyupdate** element MUST contain a value for the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3) and SHOULD contain values for the **PidTagTemporaryDefaultDocument** property (section [2.2.1.1](#)) and the **PidNameContentClass** property ([\[MS-OXCMSG\]](#) section 2.2.1.48) as specified in section [2.2.1](#).

3.1.5.5 GET Method

To request the contents of the contained resource using the **GET** method, which is specified in [\[RFC2518\]](#) section 8.4, clients MUST use a [URI](#) consisting of the URI of the [structured document](#) appended with the relative URI of a contained resource.

3.1.5.6 PUT Method

To add resources to the [structured document](#), the client MUST use a [URI](#) consisting of the URI of the structured document appended with the relative URI of a contained resource with the **PUT** method, as specified in [\[RFC2518\]](#) section 8.7.

3.1.5.7 MOVE Method

If the client attempts to use the **MOVE** method, as specified in [\[RFC2518\]](#) section 8.9, to move the default document of a [structured document](#), the server will respond with the error specified in section [3.2.5.9](#).

3.1.6 Timer Events

None.

3.1.7 Other Local Events

None.

3.2 Server Details

3.2.1 Abstract Data Model

None.

3.2.2 Timers

None.

3.2.3 Initialization

None.

3.2.4 Higher-Layer Triggered Events

None.

3.2.5 Message Processing Events and Sequencing Rules

The following sections specify extensions to the [WebDAV](#) methods specified in [\[RFC2518\]](#). These methods MUST be processed as specified in [\[RFC2518\]](#) except for the cases specified in the following sections.

3.2.5.1 PidTagTemporaryDefaultDocument

Servers MUST return the relative URI of the default document in response to a **PROPFIND** method request, as specified in [\[RFC2518\]](#) section 8.1, for the **PidTagTemporaryDefaultDocument**

property (section [2.2.1.1](#)). If the server receives a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, with the **PidTagTemporaryDefaultDocument** property set, then it MUST create a [structured document](#) and set the default document to the value of the **PidTagTemporaryDefaultDocument** property. Note that the request MUST also have the proper value of the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3), as specified in section [3.2.5.2](#).

If the server receives a **PROPPATCH** method request, as specified in [\[RFC2518\]](#) section 8.2, or a **PUT** method request, as specified in [\[RFC2518\]](#) section 8.7, with the **PidTagTemporaryDefaultDocument** property set, then it MUST update the default document to the value of the **PidTagTemporaryDefaultDocument** property.

3.2.5.2 PidNameDavResourceType

If the server receives a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, with the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3) containing "<DAV:structureddocument/>", then it MUST create a [structured document](#).

The server MUST ensure that the value "<DAV:collection/>" is added to the value of the **PidNameDavResourceType** property on structured documents. This value is optional in the **MKCOL** method request.

3.2.5.3 PidNameContentClass

If the server receives a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, with the **PidNameContentClass** property ([\[MS-OXCMMSG\]](#) section 2.2.1.48) set to "urn:content-classes:structureddocument", then it MUST create a [structured document](#). Note that the request MUST also have the proper value for the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3), as specified in section [3.2.5.2](#).

3.2.5.4 MKCOL Method

If the server receives a **MKCOL** method request, as specified in [\[RFC2518\]](#) section 8.3, to create a [structured document](#), then the **PidNameDavResourceType** property ([\[MS-XWDSEARCH\]](#) section 2.2.3.3) MUST be set as specified in section [3.2.5.2](#), and the **PidTagTemporaryDefaultDocument** property (section [2.2.1.1](#)) and the **PidNameContentClass** property ([\[MS-OXSHARE\]](#) section 2.2.5.1) SHOULD be set as specified in sections [3.2.5.1](#) and [3.2.5.3](#).

3.2.5.5 PROPFIND Method

If the server receives a **PROPFIND** method request, as specified in [\[RFC2518\]](#) section 8.1, for the [URI](#) of a [structured document](#) with a **Depth** header (2), as specified in [\[RFC2518\]](#) section 9.2, specified with a valid value, then the server MUST ignore the value of the **Depth** header (2) and treat the request as if the **Depth** header (2) is set to 0. Only properties of the structured document are returned, and properties of the contained resources are omitted.

3.2.5.6 SEARCH Method

If the server receives a **SEARCH** method request, as specified in [\[MS-WDVSE\]](#), for the [URI](#) of a [structured document](#), then the server MUST return a 400 Bad Request error code response, as specified in [\[RFC2068\]](#) section 10.4.1.

If the server receives a **SEARCH** method request for the [URI](#) of a folder on the server that contains a structured document, then the server MUST NOT include resources contained inside the structured document. The server MUST return the structured document itself if appropriate.

3.2.5.7 GET Method

If the server receives a **GET** method request, as specified in [\[RFC2518\]](#) section 8.4, for the [URI](#) of a resource contained within a [structured document](#), then the server **MUST** return the contents of the contained resource.

3.2.5.8 PUT Method

If the server receives a **PUT** method request, as specified in [\[RFC2518\]](#) section 8.7, for the [URI](#) of a resource contained within a [structured document](#), then the server **MUST** update the entity tag of the parent structured document. Entity tags are specified in [\[RFC2068\]](#).

3.2.5.9 MOVE Method

If the server receives a **MOVE** method request, as specified in [\[RFC2518\]](#) section 8.9, for the [URI](#) of the default document of a [structured document](#), then it **MUST NOT** perform the **MOVE** method request and **MUST** return a 501 Not Implemented error code response, as specified in [\[RFC2068\]](#) section 10.4.1.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

None.

4 Protocol Examples

4.1 Creating a Structured Document

A user is using a [WebDAV client](#) to access the server. The user wants to create a [structured document](#) called MyDocCol and add two resources, default.txt and other.txt, to the structured document.

The client begins by using a **MKCOL** method request, as described in [\[RFC2518\]](#) section 8.3, to create the structured document.

```
MKCOL /public/Testing/MyDocCol HTTP/1.1
Content-Type: text/xml

<?xml version="1.0"?>
<a:propertyupdate xmlns:a="DAV:">
  <a:set>
    <a:prop>
      <a:resourcetype><a:structureddocument/></a:resourcetype>
      <a:defaultdocument>default.txt</a:defaultdocument>
      <a:contentclass>urn:content-classes:structureddocument</a:contentclass>
    </a:prop>
  </a:set>
</a:propertyupdate>
```

The server processes the request and successfully creates the structured document.

```
HTTP/1.1 207 Multi-Status
Date: Tue, 04 Nov 2008 16:33:36 GMT
Content-Type: text/xml
Content-Length: 300

<?xml version="1.0" ?>
<a:multistatus xmlns:a="DAV:">
  <a:response>
    <a:href>http://ex01/public/Testing/MyDocCol</a:href>
    <a:status>HTTP/1.1 201 Created</a:status>
    <a:propstat>
      <a:status>HTTP/1.1 200 OK</a:status>
      <a:prop>
        <a:defaultdocument />
        <a:contentclass />
      </a:prop>
    </a:propstat>
  </a:response>
</a:multistatus>
```

Next, the client uses a **PUT** method request, as described in [\[RFC2518\]](#) section 8.7, to insert the contents of default.txt.

```
PUT /public/Testing/MyDocCol/default.txt HTTP/1.1
Content-Type: text/plain
```

This is the contents of default.txt.

The server processes the request and successfully adds the content.

```
HTTP/1.1 201 Created
Date: Tue, 04 Nov 2008 16:34:14 GMT
Content-Type: text/html
Content-Length: 85
Allow: OPTIONS, TRACE, GET, HEAD, DELETE, PUT, COPY, MOVE, PROPFIND, PROPPATCH, SEARCH,
SUBSCRIBE, UNSUBSCRIBE, POLL, BDELETE, BCOPY, BMOVE, BPROPPATCH, BPROPFIND, LOCK, UNLOCK
GetEtag: "4089bc4932289941ad27bacc5f89e8a90021a560f30e"

<body><h1>/public/Testing/MyDocCol/default.txt was created successfully</h1></body>
```

Next the client uses a **PUT** method request to insert the contents of other.txt.

```
PUT /public/Testing/MyDocCol/other.txt HTTP/1.1
Content-Type: text/plain
```

This is the contents of other.txt.

The server processes the request and successfully adds the content.

```
HTTP/1.1 201 Created
Date: Tue, 04 Nov 2008 16:34:55 GMT
Content-Type: text/html
Content-Length: 83
Allow: OPTIONS, TRACE, GET, HEAD, DELETE, PUT, COPY, MOVE, PROPFIND, PROPPATCH, SEARCH,
SUBSCRIBE, UNSUBSCRIBE, POLL, BDELETE, BCOPY, BMOVE, BPROPPATCH, BPROPFIND, LOCK, UNLOCK
GetEtag: "4089bc4932289941ad27bacc5f89e8a90021a560f310"

<body><h1>/public/Testing/MyDocCol/other.txt was created successfully</h1></body>
```

4.2 Retrieving Content of a Contained Resource

The user wishes to retrieve the content of default.txt from MyDocCol.

The client sends a **GET** method request, as specified in [\[RFC2518\]](#) section 8.4, with the [URI](#) of default.txt.

```
GET /public/Testing/MyDocCol/default.txt HTTP/1.1
Translate: f
```

The server processes the request and returns the contents of other.txt.

```
HTTP/1.1 200 OK
Date: Tue, 04 Nov 2008 16:35:51 GMT
Content-Type: text/plain; charset="iso-8859-1"
Content-Length: 36
```

ETag: "4089bc4932289941ad27bacc5f89e8a90021a560f311"
Last-Modified: Tue, 04 Nov 2008 16:34:55 GMT
Accept-Ranges: bytes
This is the contents of default.txt.

5 Security

5.1 Security Considerations for Implementers

There are no special security concerns specific to the WebDAV Extensions for Structured Documents. General security considerations pertaining to the underlying transport apply, as described in [\[RFC2518\]](#) and [\[MS-WDVSE\]](#).

5.2 Index of Security Parameters

None.

6 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:

- Microsoft Exchange Server 2003
- Microsoft Exchange Server 2007

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.

7 Change Tracking

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

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