

[MS-OXSHRMSG]: Sharing Message Attachment Schema

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Revision Summary

Date	Revision History	Revision Class	Comments
11/04/2009	1.0.0	Major	Initial Availability
02/10/2010	1.1.0	Minor	Updated the technical content.
05/05/2010	1.1.1	Editorial	Revised and edited the technical content.
08/04/2010	2.0	Major	Significantly changed the technical content.
11/03/2010	2.1	Minor	Clarified the meaning of the technical content.
03/18/2011	3.0	Major	Significantly changed the technical content.
08/05/2011	3.1	Minor	Clarified the meaning of the technical content.
10/07/2011	3.1	No change	No changes to the meaning, language, or formatting of the technical content.
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04/27/2012	4.0	No change	No changes to the meaning, language, or formatting of the technical content.
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1 Introduction

The Sharing Message Attachment Schema defines the schema for a document that is used to establish a sharing relationship between two servers on behalf of client applications. This document contains identification information and encrypted tokens that enable the two servers to authenticate and establish the sharing relationship.

Sections 1.7 and 2 of this specification are normative and can contain the terms MAY, SHOULD, MUST, MUST NOT, and SHOULD NOT as defined in [\[RFC2119\]](#). All other sections and examples in this specification are informative.

1.1 Glossary

The following terms are defined in [MS-OXGLOS]:

folder
Hypertext Transfer Protocol (HTTP)
shared folder
Uniform Resource Identifier (URI)
XML
XML document
XML namespace
XML namespace prefix
XML schema

The following terms are specific to this document:

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

References to Microsoft Open Specification documents do not include a publishing year because links are to the latest version of the 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.

[MS-OXWSMSHR] Microsoft Corporation, "[Folder Sharing Web Service Protocol](#)".

[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>

[RFC2445] Dawson, F., and Stenerson, D., "Internet Calendaring and Scheduling Core Object Specification (iCalendar)", RFC 2445, November 1998, <http://www.rfc-editor.org/rfc/rfc2445.txt>

[XML] World Wide Web Consortium, "Extensible Markup Language (XML) 1.0 (Fourth Edition)", W3C Recommendation 16 August 2006, edited in place 29 September 2006, <http://www.w3.org/TR/2006/REC-xml-20060816/>

[XMLENC] Imamura, T., Dillaway, B., and Simon, E., "XML Encryption Syntax and Processing", W3C Recommendation, December 2002, <http://www.w3.org/TR/2002/REC-xmlenc-core-20021210/>

[XMLNS] Bray, T., Hollander, D., Layman, A., et al., Eds., "Namespaces in XML 1.0 (Third Edition)", W3C Recommendation, December 2009, <http://www.w3.org/TR/2009/REC-xml-names-20091208/>

[XMLSCHEMA1] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/>

[XMLSCHEMA2] Biron, P.V., Ed. and Malhotra, A., Ed., "XML Schema Part 2: Datatypes", W3C Recommendation, May 2001, <http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/>

1.2.2 Informative References

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

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

1.3 Overview

This schema specifies the authentication and identification information that is required for two servers to set up a sharing relationship on behalf of client applications.

To establish folder sharing, the client creates a sharing message **XML document** based on this schema and sends the document as an attachment on an email message. For more information about **folder** sharing and sending an attachment, see [\[MS-OXWSMSHR\]](#).

1.4 Relationship to Protocols and Other Structures

This schema is used by the Folder Sharing Web Service Protocol, as described in [\[MS-OXWSMSHR\]](#), to provide authentication and identification information when a **shared folder** relationship is established between two servers. The operations that provide the encrypted token and folder information that is required by the servers to establish the sharing relationship are described in [\[MS-OXWSMSHR\]](#).

Encrypted data elements of the sharing message structure are described in [\[MS-OXWSMSHR\]](#). The format of the encrypted data that are contained in the encrypted data elements is described in [\[XMLENC\]](#).

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

1.5 Applicability Statement

The XML document that is defined by this schema enables servers to share information on behalf of client applications with less risk of exposing secrets to those client applications. The encrypted data section of the sharing message is passed between the client applications while the information within the sharing message is protected.

1.6 Versioning and Localization

None.

1.7 Vendor-Extensible Fields

None.

2 Structures

2.1 Sharing Message Schema

The following sections specify the elements and attributes of the sharing message attachment. The elements and attributes use type definitions from [\[XMLSCHEMA1\]](#) and [\[XMLSCHEMA2\]](#).

2.1.1 Sharing Message Attachment Namespace

This schema defines and references various **XML namespaces** using mechanisms specified in [\[XMLNS\]](#). Although this specification associates a specific **XML namespace prefix** for each XML namespace that is used, the choice of any particular XML namespace prefix is implementation-specific and not significant for interoperability.

Prefix	Namespace URI	Reference
tns	http://schemas.microsoft.com/exchange/sharing/2008	
xs	http://www.w3.org/2001/XMLSchema	[XMLSCHEMA1]
enc	http://www.w3.org/2001/04/xmlenc#	[XMLENC]
ews	http://schemas.microsoft.com/exchange/services/2006/types	[MS-OXWSMSHR]

2.1.2 Sharing Message Attachment Processing Instructions

The following **XML** processing instruction tag, as specified in [\[XML\]](#) section 2.6, MUST appear in the sharing message attachment file.

```
<?xml version="1.0"?>
```

2.1.3 t:AcceptOfRequestType Complex Type

The **AcceptOfRequestType** complex type specifies that the request for access is granted.

```
<xs:complexType name="AcceptOfRequestType">
  <xs:sequence>
    <xs:element name="Title" type="xs:string" minOccurs="0" />
    <xs:element name="Providers" type="t:ProvidersType" />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child elements of the **AcceptOfRequest** complex type.

Element name	Type	Description
Title	xs:string [XMLSCHEMA2]	The display name of the folder list.
Providers	t:ProvidersType (section 2.1.9)	The folders and the encrypted information to which access is accepted.

2.1.4 t:DataTypeType Simple Type

The **DataTypeType** simple type defines the valid sharing message attachment types.

```
<xs:simpleType name="DataTypeType">
  <xs:restriction
    base="xs:string"
  >
    <xs:enumeration
      value="calendar"
    />
  </xs:restriction>
</xs:simpleType>
```

The following value is defined by the **DataTypeType** simple type.

Value	Meaning
calendar	The sharing message attachment is for a calendar.

2.1.5 t:DenyOfRequestType Complex Type

The **DenyOfRequestType** complex type specifies that the request for access is denied. Any permission previously granted is revoked.

```
<xs:complexType name="DenyOfRequestType">
  <xs:sequence>
    <xs:element name="Providers" type="t:ProvidersType" />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child element of the **DenyOfRequestType** complex type.

Element name	Type	Description
Providers	t:ProvidersType (section 2.1.9)	The folders and the encrypted data to which access is denied.

2.1.6 t:InitiatorType Complex Type

The **InitiatorType** complex type specifies the name and email address of the entity that initiates the sharing relationship.

```
<xs:complexType name="InitiatorType">
  <xs:sequence>
    <xs:element name="Name"
      type="xs:string"
    />
    <xs:element name="SmtAddress"
```



```

        type="xs:string"
      />
    </xs:sequence>
  </xs:complexType>

```

The following table lists the child elements of the **InitiatorType** complex type.

Element name	Type	Description
Name	xs:string [XMLSCHEMA2]	The display name of the entity that initiates the sharing relationship.
SmtAddress	xs:string	The email address of the entity that initiates the sharing relationship.

2.1.7 t:InvitationType Complex Type

The **InvitationType** complex type is a sharing invitation from a sharer to a recipient. This type contains a list of folders to share and the encrypted information that is required to set up the shared folders.

```

<xs:complexType name="InvitationType">
  <xs:sequence>
    <xs:element name="Title" type="xs:string" minOccurs="0" />
    <xs:element name="Providers" type="t:ProvidersType"/>
  </xs:sequence>
</xs:complexType>

```

The following table lists the child elements of the **InvitationType** complex type.

Element name	Type	Description
Title	xs:string [XMLSCHEMA2]	Display name of the folder list.
Providers	t:ProvidersType (section 2.1.9)	One or more folders to share and the encrypted information that is required to set up the shared folders.

2.1.8 t:ProviderType Complex Type

The **ProviderType** complex type specifies a shared folder name and the encrypted information required to set up the shared folder.

```

<xs:complexType name="ProviderType">
  <xs:sequence>
    <xs:element name="FolderId"
      type="xs:string"
      minOccurs="1"
      maxOccurs="1"
      />
    <xs:element name="EncryptedSharedFolderDataCollection"

```

```

    type="t:ArrayOfEncryptedSharedFolderDataType"
    maxOccurs="1"
    minOccurs="0"
  />
  <xs:element name="BrowseUrl"
    type="xs:string"
    minOccurs="0"
    maxOccurs="1"
  />
  <xs:element name="ICalUrl"
    type="xs:string"
    minOccurs="0"
    maxOccurs="1"
  />
</xs:sequence>
<xs:attribute name="Type"
  type="xs:string"
 />
<xs:attribute name="TargetRecipients"
  type="xs:string"
 />
</xs:complexType>

```

The following table lists the child elements of the **ProviderType** complex type.

Element name	Type	Description
FolderId	xs:string [XMLSCHEMA2]	The identifier for the shared folder.
EncryptedSharedFolderDataCollection	t:ArrayOfEncryptedSharedFolderDataType ([MS-OXWSMSHR] section 2.2.4.4)	The encrypted authentication token.
BrowseUrl	xs:string	Specifies the Uniform Resource Identifier (URI) of a calendar's Web page. MUST be a fully qualified HTTP URI.
ICalUrl	xs:string	Specifies the URI of the ICalendar format calendar, as specified in [RFC2445] . MUST be a fully qualified HTTP URI.

The following table lists the attributes that are defined for the **ProviderType** complex type.

Attribute name	Type	Description
Type	xs:string	Specifies the sharing provider type. MUST be either "ms-exchange-external" or "ms-exchange-publish". <1> If the Type attribute is set to "ms-exchange-external", the FolderID and EncryptedSharedFolderDataCollection elements MUST be set, and the BrowseUrl and ICalUri elements MUST NOT be set. If the Type attribute is set to "ms-exchange-publish", the BrowseUrl and ICalUri element MUST be set, and the FolderId and EncryptedSharedFolderDataCollection elements MUST NOT be set.
TargetRecipients	xs:string	Specifies a semi-colon delimited list of email addresses that this provider applies to.

2.1.9 t:ProvidersType Complex Type

The **ProvidersType** complex type specifies one or more shared folders and the encrypted data that is required to share the folders.

```
<xs:complexType name="ProvidersType">
  <xs:sequence>
    <xs:element name="Provider"
      type="t:ProviderType"
      maxOccurs="unbounded"
    />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child element of the **ProvidersType** complex type.

Element name	Type	Description
Provider	t:ProviderType (section 2.1.8)	A shared folder name and the encrypted information required to set up the shared folder.

2.1.10 t:RequestType Complex Type

The **RequestType** complex type specifies a request for access. The response to this message is either the **AcceptOfRequestType** complex type (section [2.1.3](#)) or the **DenyOfRequestType** complex type (section [2.1.5](#)).

```
<xs:complexType name="RequestType">
  <xs:sequence>
    <xs:element name="Providers" type="t:ProvidersType" />
  </xs:sequence>
</xs:complexType>
```

The following table lists the child element of the **RequestType** complex type.

Element name	Type	Description
Providers	t:ProvidersType (section 2.1.9)	The folders and the encrypted data for which access is requested.

2.1.11 tns:SharingMessage Element

The **SharingMessage** element provides a container for the sharing message attachment elements. The **DataType** element and the **Initiator** element are required in the sharing message attachment XML document. At least one of the following elements is also required:

- **Invitation**
- **RequestType**
- **AcceptOfRequest**
- **DenyOfRequest**

```
<xs:element name="SharingMessage">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="DataType" type="t:DataTypeType"/>
      <xs:element name="Initiator" type="t:InitiatorType"/>
      <xs:choice>
        <xs:element name="AcceptOfRequest" type="t:AcceptOfRequestType"/>
        <xs:element name="DenyOfRequest" type="t:DenyOfRequestType"/>
        <xs:sequence>
          <xs:element name="RequestType" type="t:RequestType" minOccurs="0"/>
          <xs:element name="Invitation" type="t:InvitationType" minOccurs="0"/>
        </xs:sequence>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

The following table lists the child elements of the **SharingMessage** element.

Element name	Type	Description
DataType	t:DataTypeType (section 2.1.4)	The type of the sharing message attachment. This element must be present in the sharing message attachment.
Initiator	t:InitiatorType (section 2.1.6)	The name and email address of the sender of the sharing message attachment. This element must be present in the sharing message attachment.
AcceptOfRequest	t:AcceptOfRequestType (section 2.1.3)	Specifies that the request for access is accepted. This element MUST NOT be present if the DenyOfRequest element is present.
DenyOfRequest	t:DenyOfRequestType (section 2.1.5)	Specifies that the request for access is denied. This element MUST NOT be present if the AcceptOfRequest element is present.

Element name	Type	Description
RequestType	t:RequestType (section 2.1.10)	Specifies a request for access.
Invitation	t:InvitationType (section 2.1.7)	Specifies an invitation to share folders.

3 Structure Examples

To establish folder sharing, a client that is sharing information sends a Sharing Message Attachment XML document to a subscriber as an attachment on an email message. To create the document, the client first calls the **GetSharingMetadata** operation, as described in [\[MS-OXWSMSHR\]](#) section 3.1.4.4. The client then creates the document based on the Sharing Message Attachment schema. The **EncryptedSharedFolderDataCollection** element of the **GetSharingMetadataResponse** element, as described in [\[MS-OXWSMSHR\]](#) section 3.1.4.4.2.2, is inserted into the SharingMessageAttachment XML document as the **EncryptedSharedFolderDataCollection** element of the **ProviderType** element. For more information about folder sharing and sending an attachment, see [\[MS-OXWSMSHR\]](#).

This section contains an example sharing message XML document. The document specifies a request to share a calendar item, and the initiator is User1. The **FolderId** element has been shortened for readability. The **EncryptedSharedFolderData** element is copied from the **GetSharingMetadata** response example in [\[MS-OXWSMSHR\]](#) section 4.2.

```
<?xml version="1.0"?>
<SharingMessage>
  <DataType>calendar</DataType>
  <Initiator>
    <Name>User1</Name>
    <SmtpAddress>user1@contoso.com</SmtpAddress>
  </Initiator>
  <RequestType>
    <Providers>
      <Provider Type="ms-exchange-external"
        TargetRecipients="user2@contoso.com;user3@contoso.com">
        <FolderId>AAMkADc1YjI= </FolderId>
        <EncryptedSharedFolderDataCollection>
          <EncryptedSharedFolderData
            xmlns="http://schemas.microsoft.com/exchange/services/2006/types">
            <Token>
              <EncryptedData Id="Assertion0"
                Type="http://www.w3.org/2001/04/xmlenc#Element"
                xmlns="http://www.w3.org/2001/04/xmlenc#">
              <EncryptionMethod
                Algorithm="http://www.w3.org/2001/04/xmlenc#tripleDES-cbc">
              </EncryptionMethod>
              <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
                <EncryptedKey>
                  <EncryptionMethod
                    Algorithm="http://www.w3.org/2001/04/
                    xmlenc#rsa-oaep-mgf1p"></EncryptionMethod>
                <ds:KeyInfo Id="keyinfo">
                  <wsse:SecurityTokenReference
                    xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/
                    oasis-200401-wss-wssecurity-secext-1.0.xsd">
                  <wsse:KeyIdentifier
                    EncodingType="http://docs.oasis-
                    open.org/wss/2004/01/oasis-200401-wss-soap-
                    message-security-1.0#Base64Binary"
                    ValueType="http://docs.oasis-open.org/
                    wss/2004/01/oasis-
                    200401-wss-x509-token-profile-
                    1.0#X509SubjectKeyIdentifier">
```

```

        nR+jNSYQR9eSkgOpEog/xQ==
        </wsse:KeyIdentifier>
    </wsse:SecurityTokenReference>
</ds:KeyInfo>
<CipherData>
    <CipherValue>arNGOQ+nYwa/...==</CipherValue>
</CipherData>
</EncryptedKey>
</ds:KeyInfo>
<CipherData>
    <CipherValue>KhP6tqH4...=</CipherValue>
</CipherData>
</EncryptedData>
</Token>
<Data>
    <EncryptedData Type="http://www.w3.org/2001/04/xmlenc#Element"
        xmlns="http://www.w3.org/2001/04/xmlenc#">
        <EncryptionMethod
            Algorithm="http://www.w3.org/2001/04/xmlenc#aes256-cbc"/>
    <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
        <EncryptedKey xmlns="http://www.w3.org/2001/04/xmlenc#">
            <EncryptionMethod
                Algorithm="http://www.w3.org/2001/04/
                    xmlenc#kw-tripledes"/>
            <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
                <KeyName>key</KeyName>
            </KeyInfo>
            <CipherData>
                <CipherValue>
                    SqPz6UU...
                </CipherValue>
            </CipherData>
        </EncryptedKey>
    </KeyInfo>
    <CipherData>
        <CipherValue>+QXPti49k...=</CipherValue>
    </CipherData>
</EncryptedData>
</Data>
</EncryptedSharedFolderData>
</EncryptedSharedFolderDataCollection>
</Provider>
</Providers>
</RequestType>
</SharingMessage>

```

4 Security

4.1 Security Considerations for Implementers

None.

4.2 Index of Security Fields

None.

5 Appendix A: Full XML Schema

For ease of implementation, the following is the complete **XML schema** for the sharing message attachment XML document.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:t="http://schemas.microsoft.com/exchange/sharing/2008"
xmlns:tns="http://schemas.microsoft.com/exchange/sharing/2008"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:enc="http://www.w3.org/2001/04/xmlenc#"
xmlns:ews="http://schemas.microsoft.com/exchange/services/2006/types"
targetNamespace="http://schemas.microsoft.com/exchange/sharing/2008"
elementFormDefault="qualified" version="Exchange2010" id="types">

  <xs:import namespace="http://www.w3.org/2001/04/xmlenc#" />
  <xs:import namespace="http://schemas.microsoft.com/services/exchange/2006/types" />

  <xs:simpleType name="DataTypeType">
    <xs:restriction base="xs:string">
      <xs:enumeration value="calendar"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:complexType name="InitiatorType">
    <xs:sequence>
      <xs:element name="Name" type="xs:string"/>
      <xs:element name="SmtpAddress" type="xs:string"/>
    </xs:sequence>
  </xs:complexType>

  <xs:complexType name="ProviderType">
    <xs:sequence>
      <xs:element name="FolderId" type="xs:string"
        maxOccurs="1" minOccurs="0"/>
      <xs:element name="EncryptedSharedFolderDataCollection"
        type="t:ArrayOfEncryptedSharedFolderDataType"
        maxOccurs="1" minOccurs="0"/>
      <xs:element name="BrowseUrl" type="xs:string"
        minOccurs="0" maxOccurs="1"/>
      <xs:element name="ICalUrl" type="xs:string"
        minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
    <xs:attribute name="Type" type="xs:string"/>
    <xs:attribute name="TargetRecipients" type="xs:string"/>
  </xs:complexType>

  <xs:complexType name="ProvidersType">
    <xs:sequence>
      <xs:element name="Provider" type="t:ProviderType" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>

  <xs:complexType name="InvitationType">
    <xs:sequence>
      <xs:element name="Title" type="xs:string" minOccurs="0" />
      <xs:element name="Providers" type="t:ProvidersType"/>
    </xs:sequence>
  </xs:complexType>
```

```

<xs:complexType name="RequestType">
  <xs:sequence>
    <xs:element name="Providers" type="t:ProvidersType" />
  </xs:sequence>
</xs:complexType>

<xs:complexType name="AcceptOfRequestType">
  <xs:sequence>
    <xs:element name="Title" type="xs:string" minOccurs="0" />
    <xs:element name="Providers" type="t:ProvidersType" />
  </xs:sequence>
</xs:complexType>

<xs:complexType name="DenyOfRequestType">
  <xs:sequence>
    <xs:element name="Providers" type="t:ProvidersType" />
  </xs:sequence>
</xs:complexType>

<xs:element name="SharingMessage">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="DataType" type="t:DataTypeType"/>
      <xs:element name="Initiator" type="t:InitiatorType"/>
      <xs:choice>
        <xs:element name="AcceptOfRequest" type="t:AcceptOfRequestType" />
        <xs:element name="DenyOfRequest" type="t:DenyOfRequestType" />
        <xs:sequence>
          <xs:element name="RequestType" type="t:RequestType" minOccurs="0" />
          <xs:element name="Invitation" type="t:InvitationType" minOccurs="0" />
        </xs:sequence>
      </xs:choice>
    </xs:sequence>
  </xs:complexType>
</xs:element>
</xs:schema>

```

6 Appendix B: 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 2010
- Microsoft Exchange Server 2013
- Microsoft Outlook 2010
- Microsoft Outlook 2013

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.

[<1> Section 2.1.8:](#) Exchange 2010 and Exchange 2013 only accept the "ms-exchange-external" value for the **Type** attribute.

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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