

## [MS-WORDLFF]:

# Word (.xml) Co-Authoring File Format in Document Lock Persistence Structure

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Preliminary

## Revision Summary

Date	Revision History	Revision Class	Comments
7/13/2009	0.1	Major	Initial Availability
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11/6/2009	0.3	Editorial	Revised and edited the technical content
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6/29/2010	1.04	Editorial	Changed language and formatting in the technical content.
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4/30/2014	1.7	None	No changes to the meaning, language, or formatting of the technical content.
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Date	Revision History	Revision Class	Comments
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3/16/2015	2.0	Major	Significantly changed the technical content.
9/4/2015	2.0	None	No changes to the meaning, language, or formatting of the technical content.
7/15/2016	2.0	None	No changes to the meaning, language, or formatting of the technical content.
9/14/2016	2.0	None	No changes to the meaning, language, or formatting of the technical content.
4/27/2018	3.0	Major	Significantly changed the technical content.
8/28/2018	4.0	Major	Significantly changed the technical content.
12/17/2018	5.0	Major	Significantly changed the technical content.
3/19/2019	5.0	None	No changes to the meaning, language, or formatting of the technical content.
4/22/2021	6.0	Major	Significantly changed the technical content.

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# 1 Introduction

The Word (.xml) Co-Authoring File Format in Document Lock Persistence Structure enables a protocol client to create and manage authors' presence within regions of a word processing document.

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:

**Coordinated Universal Time (UTC):** A high-precision atomic time standard that approximately tracks Universal Time (UT). It is the basis for legal, civil time all over the Earth. Time zones around the world are expressed as positive and negative offsets from UTC. In this role, it is also referred to as Zulu time (Z) and Greenwich Mean Time (GMT). In these specifications, all references to UTC refer to the time at UTC-0 (or GMT).

**friendly name:** A name for a user or object that can be read and understood easily by a human.

**Session Initiation Protocol (SIP) address:** A URI that does not include a "sip:" prefix and is used to establish multimedia communications sessions between two or more users over an IP network, as described in [\[RFC3261\]](#).

**XML schema definition (XSD):** The World Wide Web Consortium (W3C) standard language that is used in defining XML schemas. Schemas are useful for enforcing structure and constraining the types of data that can be used validly within other XML documents. XML schema definition refers to the fully specified and currently recommended standard for use in authoring XML schemas.

**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](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[ISO/IEC29500-1:2016] ISO/IEC, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 1: Fundamentals and Markup Language Reference", ISO/IEC 29500-1:2016, <https://www.iso.org/standard/71691.html>

[MS-DOCX] Microsoft Corporation, "[Word Extensions to the Office Open XML \(.docx\) File Format](#)".

[MS-FSSHTTPB] Microsoft Corporation, "[Binary Requests for File Synchronization via SOAP Protocol](#)".

[MS-FSSHTTPD] Microsoft Corporation, "[Binary Data Format for File Synchronization via SOAP](#)".

[MS-FSSHTTP] Microsoft Corporation, "[File Synchronization via SOAP over HTTP Protocol](#)".

[MS-ODRAWXML] Microsoft Corporation, "[Office Drawing Extensions to Office Open XML Structure](#)".

[RFC1950] Deutsch, P., and Gailly, J-L., "ZLIB Compressed Data Format Specification version 3.3", RFC 1950, May 1996, <http://www.ietf.org/rfc/rfc1950.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>

[XMLSCHEMA1/2] Thompson, H., Beech, D., Maloney, M., and Mendelsohn, N., Eds., "XML Schema Part 1: Structures Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/>

[XMLSCHEMA2/2] Biron, P., and Malhotra, A., Eds., "XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>

## 1.2.2 Informative References

None.

## 1.3 Overview

The file format structure described in this document enables multiple protocol clients to author the same word processing document while communicating information about which regions of the document are being edited and by whom. These regions are hereafter called presence regions.

A protocol client can specify presence regions composed of one or more contiguous paragraphs. These regions will be attributed to an author so that all protocol clients will be aware of who is using that region. For more information, see section [2.4.3.7](#).

A protocol client can also specify region identifiers that no protocol client can reuse when specifying new presence regions. Each such region identifier is associated with a time. For more information, see section [2.4.3.9](#).

Because the list of IDs that cannot be reused can grow unbounded, a protocol client can specify a time to limit the size of the list. Any region identifier with an associated time before the specified time can again be used. For more information, see section [2.4.3.2](#).

## 1.4 Relationship to Protocols and Other Structures

The persistence format described in this document will be used with word processing documents based on the specification [\[MS-DOCX\]](#) and will be stored within a root cell, with a 40-byte cell identifier 6F2A4665-42C8-46C7-BAB4E28FDCE1E32B-00000001-84DEFAB9-AAA3-4A0D-A3A8-520C77AC7073-00000001, for the document, as described in [\[MS-FSSHTTBP\]](#). This cell is hereafter called the primary metadata channel. The stream for obtaining it involves an additional root declaration aside from the one in the stream of the main file content partition, as described in [\[MS-FSSHTTDP\]](#) section 2.3. The partition Id for obtaining the metadata in a separate FSSHTTP SubRequest is 383adc0b-e66e-4438-95e6-e39ef9720122, as described in [\[MS-FSSHTTP\]](#) section 2.3.3.1. This partition is hereafter called the secondary metadata channel. The persistence format described in this document is compressed as described in section [2.3](#).

## 1.5 Applicability Statement

This document describes a persistence format for authors' presence regions in a word processing document. This persistence format is applicable when the document content will be saved to a shared location and edited by multiple authors. This persistence format is applicable only when it is contained within either the primary metadata channel or the secondary metadata channel. All structures are

applicable to both the primary metadata channel and the secondary metadata channel, unless otherwise noted.

## **1.6 Versioning and Localization**

None.

## **1.7 Vendor-Extensible Fields**

None.



## 2 Structures

In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The **XSD** in this specification provides a base description of the file format. The text that introduces the XSD specifies additional restrictions that reflect protocol behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **present**, and **not null**.

### 2.1 Global Elements

### 2.2 Global Attributes

None.

### 2.3 Compression

The previous sections specify an xml vocabulary for managing authors' presence with regions of a word processing document. This section specifies the format of the binary stream resulting from compressing the xml document specified by the previous sections.

The structure of the stream is specified by the following table.

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
signature																															
...																															
data (variable)																															
...																															
reserved																															
size																															

**signature (8 bytes):** MUST be the following 8 bytes: 0x1A, 0x5A, 0x3A, 0x30, 0x00, 0x00, 0x00, 0x00.

**data (variable):** An array of bytes resulting from using zlib (as specified in [RFC1950](#)) to compress the UTF-8 representation (without a byte order mark) of the xml document specified by the previous sections.

**reserved (4 bytes):** MUST be ignored.

**size (4 bytes):** An unsigned integer containing the uncompressed size of the UTF-8 representation (without a byte order mark) of the xml document that is compressed as data.

## 2.4 <http://schemas.microsoft.com/word/2009/7/coauthoring>

### 2.4.1 Elements

#### 2.4.1.1 CoAuthoringLocks

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

A [CT\\_CALocks](#) element that specifies the creation and management of authors' presence regions within the document. This is the root element of the Word Co-Authoring File Format.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this element.

```
<xsd:element name="CoAuthoringLocks" type="ca:CT_CALocks">
  <xsd:unique name="LockIdUniqueness">
    <xsd:selector xpath=".*"/*"/>
    <xsd:field xpath="@LockId"/>
  </xsd:unique>
</xsd:element>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

### 2.4.2 Attributes

None.

### 2.4.3 Complex Types

#### 2.4.3.1 CT\_CALocks

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CoAuthoringLocks](#)

Specifies the creation and management of authors' presence regions within the document.

*Child Elements:*

**Sync:** A [CT\\_Sync](#) element that specifies a synchronization request.

**Lock:** A [CT\\_ParaLock](#) element that specifies the presence information in a region in the document. By default, there are no presence regions in the document.

**UncommittedLock:** A [CT\\_ParaLock](#) element that specifies the presence information in a region of the document. This element MUST NOT be sent over the primary metadata channel. By default, there are no presence regions in the document.

**EphemeralLock:** A [CT\\_ParaLock](#) element that specifies the presence information in a region of the document. This element MUST NOT be sent over the primary metadata channel. By default, there are no presence regions in the document.

**DeletedLocks:** A [CT\\_ReservedIDs](#) element that specifies all presence region identifiers that MUST NOT be used within a [CT\\_ParaLock](#) element. By default, all presence region identifiers are available to be used.

**IDPruneTime:** A [CT\\_IDPruneTime](#) element that specifies the earliest time for which a removed presence region [LockId](#) element MUST be retained. Any LockId element whose associated TimeStamp attribute is earlier than the one specified by this element is eligible for reuse. By default, all removed presence region LockId elements MUST be retained.

**AutoDeletableLocks:** A [CT\\_LockIDChange](#) element that specifies presence region identifiers of the document that MUST NOT be used within a CT\_ParaLock element. This element MUST NOT be sent over the primary metadata channel. By default, all presence region identifiers are available to be used.

**MakePlaceholder:** A CT\_LockIDChange element that specifies the presence information in a region that MUST NOT be used within a CT\_ParaLock element after a subsequent save operation. This element MUST NOT be sent over the primary metadata channel. By default, all presence region identifiers are available to be used.

**UserInfoChanges:** A [CT\\_UserInfoChanges](#) element that specifies any author data that has changed for a client. This element MUST NOT be sent over the primary metadata channel.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_CALocks">
  <xsd:sequence>
    <xsd:element name="Sync" type="ca:CT_Sync" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="Lock" type="ca:CT_ParaLock" minOccurs="0" maxOccurs="unbounded">
      <xsd:unique name="LockParaIdUniqueness">
        <xsd:selector xpath="./ParaId"/>
        <xsd:field xpath="@Val"/>
      </xsd:unique>
    </xsd:element>
    <xsd:element name="UncommittedLock" type="ca:CT_ParaLock" minOccurs="0"
maxOccurs="unbounded">
      <xsd:unique name="UncommittedLockParaIdUniqueness">
        <xsd:selector xpath="./ParaId"/>
        <xsd:field xpath="@Val"/>
      </xsd:unique>
    </xsd:element>
    <xsd:element name="EphemeralLock" type="ca:CT_ParaLock" minOccurs="0"
maxOccurs="unbounded">
      <xsd:unique name="EphemeralLockParaIdUniqueness">
        <xsd:selector xpath="./ParaId"/>
        <xsd:field xpath="@Val"/>
      </xsd:unique>
    </xsd:element>
    <xsd:element name="DeletedLocks" type="ca:CT_ReservedIDs" minOccurs="0" maxOccurs="1">
      <xsd:unique name="DeletedLocksLockValUniqueness">
        <xsd:selector xpath="./LockId"/>
        <xsd:field xpath="@Val"/>
      </xsd:unique>
    </xsd:element>
    <xsd:element name="IDPruneTime" type="ca:CT_IDPruneTime" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="AutoDeletableLocks" type="ca:CT_LockIDChange" minOccurs="0"
maxOccurs="1">
      <xsd:unique name="AutoDeletableLocksLockValUniqueness">
        <xsd:selector xpath="./LockId"/>
        <xsd:field xpath="@Val"/>
      </xsd:unique>
    </xsd:element>
    <xsd:element name="MakePlaceholder" type="ca:CT_LockIDChange" minOccurs="0"
maxOccurs="1">
      <xsd:unique name="MakePlaceholderLockValUniqueness">
        <xsd:selector xpath="./LockId"/>
        <xsd:field xpath="@Val"/>
      </xsd:unique>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```

    <xsd:element name="UserInfoChanges" type="ca:CT UserInfoChanges" minOccurs="0"
maxOccurs="1"/>

  </xsd:sequence>
</xsd:complexType>

```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

### 2.4.3.2 CT\_IDPruneTime

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_CALocks](#)

Specifies a time to use to limit the size of the list of reserved region identifiers. For information about how to use this value see the **IDPruneTime** element in section 2.4.3.1.

*Attributes:*

**TimeStamp:** A **dateTime** attribute, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.7, used to limit the size of the list of reserved region identifiers. MUST be present.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CT_IDPruneTime">
  <xsd:attribute name="TimeStamp" type="xsd:dateTime" use="required"/>
</xsd:complexType>

```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

### 2.4.3.3 CT\_LockID

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_ReservedIDs](#)

Specifies a presence region identifier.

*Attributes:*

**Val:** An [ST\\_LongHexNumber](#) attribute that specifies the identity of the region described. MUST be present. MUST be unique in the document. MUST NOT be zero.

**TimeStamp:** A **dateTime** (as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.7) in Coordinated Universal Time (UTC) that specifies the time associated with this region identifier. MUST be present.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CT_LockID">
  <xsd:attribute name="Val" type="ca:ST LongHexNumber" use="required"/>
  <xsd:attribute name="TimeStamp" type="xsd:dateTime" use="required"/>
</xsd:complexType>

```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

#### 2.4.3.4 CT\_LockIDChange

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_CALocks](#)

Specifies a collection of presence region identifiers that are either being removed or will be removed depending upon a user action.

*Child Elements:*

**LockId:** A [CT\\_LockIDVal](#) element that specifies a presence region identifier.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_LockIDChange">
  <xsd:sequence>
    <xsd:element name="LockId" type="ca:CT_LockIDVal" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

#### 2.4.3.5 CT\_LockIDVal

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_LockIDChange](#)

Specifies a presence region identifier.

*Attributes:*

**Val:** An [ST\\_LongHexNumber](#) attribute that specifies the identity of the region described. MUST be present. MUST be unique in the document. MUST NOT be zero.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_LockIDVal">
  <xsd:attribute name="Val" type="ca:ST_LongHexNumber" use="required"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

#### 2.4.3.6 CT\_LockOwner

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_ParaLock](#), [CT\\_UserInfoChanges](#)

Specifies the author data for a presence region.

*Attributes:*

**OwnerID:** An [ST\\_Guid](#) attribute that uniquely identifies a particular author on a particular computer. MUST be present.

**OwnerName:** string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies the author's **friendly name**. By default, no name is displayed.

**OwnerSIPAddress:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies the **Session Initiation Protocol (SIP) address** of the author. By default, there is no SIP address.

**OwnerEmailAddress:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies the e-mail address of the author. By default, there is no e-mail address.

**OwnerUserName:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that uniquely identifies a particular author. MUST be present.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_LockOwner">
  <xsd:attribute name="OwnerID" type="ca:ST_Guid" use="required"/>
  <xsd:attribute name="OwnerName" type="xsd:string"/>
  <xsd:attribute name="OwnerSIPAddress" type="xsd:string"/>
  <xsd:attribute name="OwnerEmailAddress" type="xsd:string"/>
  <xsd:attribute name="OwnerUserName" type="xsd:string"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

#### 2.4.3.7 CT\_ParaLock

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_CALocks](#)

Specifies the presence information about a range of paragraphs. All paragraphs listed MUST be within the same presence region if they exist in the document.

*Child Elements:*

**ParaId:** A [CT\\_Parid](#) element that specifies a particular paragraph in the associated document. MUST occur at least once.

*Attributes:*

**LockId:** An [ST\\_LongHexNumber](#) attribute that specifies the identity of the region described. MUST be present. MUST be unique in the document. The value of the **LockId** attribute MUST NOT match the value of the **Val** attribute of any **LockId** child of any element of type [CT\\_ReservedIDs](#) in this file. The value of the **LockId** attribute MUST NOT be zero.

**OwnerID:** An [ST\\_Guid](#) attribute that uniquely identifies a particular author on a particular computer. MUST be present.

**OwnerName:** string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies the author's **friendly name**. By default, no name is displayed.

**OwnerSIPAddress:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies the **Session Initiation Protocol (SIP) address** of the author. By default, there is no SIP address.

**OwnerEmailAddress:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies the e-mail address of the author. By default, there is no e-mail address.

**OwnerUserName:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that uniquely identifies a particular author. MUST be present.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_ParaLock">
  <xsd:complexContent>
    <xsd:extension base="ca:CT_LockOwner">
      <xsd:sequence>
        <xsd:element name="ParaId" type="ca:CT_Parid" minOccurs="1" maxOccurs="unbounded"/>
      </xsd:sequence>
      <xsd:attribute name="LockId" type="ca:ST_LongHexNumber" use="required"/>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

#### 2.4.3.8 CT\_Parid

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_ParaLock](#)

Specifies the **paraId**, as specified in [\[MS-DOCX\]](#) section 2.6.2.3 of a single paragraph in the associated document.

*Attributes:*

**Val:** An [ST\\_LongHexNumber](#) attribute that specifies the **paraID** (as specified in [\[MS-DOCX\]](#) section 2.6.2.3) of a paragraph in the associated document. MUST be unique within [CT\\_CALocks](#). MUST NOT be zero. This attribute MUST be present.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Parid">
  <xsd:attribute name="Val" type="ca:ST_LongHexNumber" use="required"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

#### 2.4.3.9 CT\_ReservedIDs

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_CALocks](#)

Specifies a collection of presence region identifiers that are reserved. If a [CT\\_ParaLock](#) element appears with a **LockId** attribute equal to a presence region identifier specified in this collection then that CT\_ParaLock element MUST be ignored.

*Child Elements:*

**LockId:** A [CT\\_LockID](#) element that specifies a presence region identifier that MUST NOT be used within a CT\_ParaLock element. MUST occur at least once.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```

<xsd:complexType name="CT_ReservedIDs">
  <xsd:sequence>
    <xsd:element name="LockId" type="ca:CT_LockID" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>

```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

### 2.4.3.10 CT\_Sync

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_CALocks](#)

Specifies a synchronization request. If the **RevisionID** attribute matches the associated document's base revision identifier (as specified in [\[MS-FSSHTTPB\]](#) section 3.1.1), the associated document's **docId** element (as specified in [\[MS-DOCX\]](#) section 2.6.1.14) MUST be set to the **DocID** attribute value, and the following attributes:

- The **paraId** attribute (as specified in [\[MS-DOCX\]](#) section 2.6.2.3),
- The **anchorId** attribute (as specified in [\[MS-DOCX\]](#) section 2.6.2.1),
- The **anchorId** attribute (as specified in [\[MS-ODRAWXML\]](#) section 2.18.2.1),
- The **editId** attribute (as specified in [\[MS-ODRAWXML\]](#) section 2.18.2.2),

within the associated document MUST be renumbered as specified in the following paragraphs.

The value of the first such attribute encountered MUST be set to the value of the **DocID** attribute. The value of each subsequent attribute is determined by adding 1 to the previous value used. If number 0x7FFFFFFF is used, the next number used MUST be 0x00000001 rather than 0x80000000. If more than one of the attributes appears on the same element, the order of the attributes in the preceding list specifies the order of assigning renumbered values to them.

Renumbered values MUST be assigned in the following order (refer to [\[ISO/IEC29500-1:2016\]](#) section 11.3 for WordprocessingML parts):

1. The Main Document part, excluding text boxes. Advance two values before moving on to the paragraphs in the Comments part.
2. The Comments part.
3. Any paragraph in the Footnotes part that are contained in a **footnote** element (as specified in [\[ISO/IEC29500-1:2016\]](#) section 17.11.10) whose **type** attribute has value "separator" or "continuationSeparator".
4. Any paragraph in the Endnotes part that are contained in an **endnote** element (as specified in [\[ISO/IEC29500-1:2016\]](#) section 17.11.2) whose **type** attribute has value "separator" or "continuationSeparator".
5. Header and Footer parts, excluding text boxes, in the order in which they are referenced in the Main Document part.
6. Any remaining paragraphs in the Footnotes part not already covered by item 3 preceding.
7. Any remaining paragraphs in the Endnotes part not already covered by item 4 preceding.
8. The text boxes of the Main Document part.



## 9. Header and footer text boxes.

### Attributes:

**DocID:** An [ST\\_LongHexNumber](#) attribute that specifies the document identifier that MUST be applied by other authors whose base **RevisionID** attribute (as specified in [MS-FSSHTTPB] section 3.1.1) matches **RevisionID**. This document identifier is also used as the initial **paraId** attribute (as specified in [MS-DOCX] section 2.6.2.3) for synchronizing paraId attributes across co-authors. This attribute MUST be present.

**NextID:** An ST\_LongHexNumber attribute that specifies the **paraId** attribute (as specified in [MS-DOCX] section 2.6.2.3) that follows the last **paraId** attribute used for renumbering the associated document. This attribute MUST be present.

**RevisionID:** A string, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.1, that specifies an identifier for the associated document's base revision identifier (as specified in [MS-FSSHTTPB] section 3.1.1), to which this synchronization request applies. This attribute MUST be present.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_Sync">
  <xsd:attribute name="DocID" type="ca:ST_LongHexNumber" use="required"/>
  <xsd:attribute name="NextID" type="ca:ST_LongHexNumber" use="required"/>
  <xsd:attribute name="RevisionID" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

### 2.4.3.11 CT\_UserInfoChanges

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_CALocks](#)

Specifies an author that has had their author data change in some way.

#### Child Elements:

**UserInfoChange:** A [CT\\_LockOwner](#) element that specifies author data.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this complex type.

```
<xsd:complexType name="CT_UserInfoChanges">
  <xsd:sequence>
    <xsd:element name="UserInfoChange" type="ca:CT_LockOwner" minOccurs="0"
      maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section [5.1](#) for the full W3C XML Schema ([XMLSCHEMA1/2] section 2.1).

## 2.4.4 Simple Types

### 2.4.4.1 ST\_Guid

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_LockOwner](#), [CT\\_ParaLock](#)

Specified in [\[ISO/IEC29500-1:2016\]](#) section 22.9.2.4.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this simple type.

```
<xsd:simpleType name="ST_Guid">
  <xsd:restriction base="xsd:token">
    <xsd:pattern value="\{[0-9A-F]{8}-[0-9A-F]{4}-[0-9A-F]{4}-[0-9A-F]{4}-[0-9A-F]{12}\}" />
  </xsd:restriction>
</xsd:simpleType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

### 2.4.4.2 ST\_LongHexNumber

*Target namespace:* <http://schemas.microsoft.com/word/2009/7/coauthoring>

*Referenced by:* [CT\\_Sync](#), [CT\\_Parid](#), [CT\\_ParaLock](#), [CT\\_LockID](#), [CT\\_LockIDVal](#)

A **hexBinary**, as specified in [\[XMLSCHEMA2/2\]](#) section 3.2.15, with a length restriction of 4.

The following W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1) fragment specifies the contents of this simple type.

```
<xsd:simpleType name="ST_LongHexNumber">
  <xsd:restriction base="xsd:hexBinary">
    <xsd:length value="4" />
    <xsd:pattern value="(?!00000000).*" />
  </xsd:restriction>
</xsd:simpleType>
```

See section [5.1](#) for the full W3C XML Schema ([\[XMLSCHEMA1/2\]](#) section 2.1).

### 3 Structure Examples

In the following sections, the schema definition might differ from the processing rules imposed by the protocol. The **XSD** in this specification provides a base description of the file format. The text that introduces the XSD specifies additional restrictions that reflect protocol behavior. For example, the schema definition might allow for an element to be **empty**, **null**, or **not present** but the behavior of the protocol as specified restricts the same elements to being **non-empty**, **present**, and **not null**.

The following XML is an example of a [CoAuthoringLocks](#) element.

```
<CoAuthoringLocks xmlns="http://schemas.microsoft.com/word/2009/7/coauthoring">
  <Lock xmlns="" OwnerID="{38A992A1-8CDB-4D8B-B881-7D7E45E06B72}"
    OwnerName="Claus Hansen" OwnerSIPAddress="sip:claus@example.com"
    OwnerEmailAddress="claus@example.com" OwnerUserName="claus" LockId="76224563">
    <ParaId Val="4F2EB091"/>
  </Lock>
  <Lock xmlns="" OwnerID="{33B5F63F-E6B4-41AA-B64E-552D8127DF2B}" OwnerName="Jeff
    Hay" OwnerSIPAddress="sip:jeff@example.com" OwnerEmailAddress="jeff@example.com"
    OwnerUserName="jeff" LockId="316786F3">
    <ParaId Val="4D3895E6"/>
    <ParaId Val="0EDB6FA0"/>
  </Lock>
  <DeletedLocks>
    <LockId Val="3F459ACD" TimeStamp="2009-05-14T00:18:14Z"/>
  </DeletedLocks>
</CoAuthoringLocks>
```

The first `<Lock .../>` element shows that an author named Claus Hansen is present within the region described by `<ParaId Val="4F2EB091"/>`. This region has the [LockId](#) value of "76224563".

The second `<Lock .../>` element shows that an author named Jeff Hay is present within the region described by the two `<ParaId .../>` entries. This region has the LockId value of "316786F3".

The `<DeletedLocks .../>` element indicates that a presence region with the LockId value of "3F459ACD" existed at one time, but that the author who was using it removed his or her presence as of the time given by TimeStamp.

## **4 Security**

### **4.1 Security Considerations for Implementers**

None.

### **4.2 Index of Security Fields**

None.

## 5 Appendix A: Full XML Schemas

Schema name	Prefix	Section
<a href="http://schemas.microsoft.com/word/2009/7/coauthoring">http://schemas.microsoft.com/word/2009/7/coauthoring</a> Schema	ca	<a href="#">5.1</a>

### 5.1 <http://schemas.microsoft.com/word/2009/7/coauthoring> Schema ▲

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="unqualified"
attributeFormDefault="unqualified" blockDefault="#all"
xmlns:ca="http://schemas.microsoft.com/word/2009/7/coauthoring"
targetNamespace="http://schemas.microsoft.com/word/2009/7/coauthoring">
  <xsd:simpleType name="ST_LongHexNumber">
    <xsd:restriction base="xsd:hexBinary">
      <xsd:length value="4"/>
      <xsd:pattern value="(?!00000000).*/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:simpleType name="ST_Guid">
    <xsd:restriction base="xsd:token">
      <xsd:pattern value="\{ [0-9A-F]{8}-[0-9A-F]{4}-[0-9A-F]{4}-[0-9A-F]{4}-[0-9A-F]{12}\}"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:complexType name="CT_Sync">
    <xsd:attribute name="DocID" type="ca:ST_LongHexNumber" use="required"/>
    <xsd:attribute name="NextID" type="ca:ST_LongHexNumber" use="required"/>
    <xsd:attribute name="RevisionID" type="xsd:string" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_LockOwner">
    <xsd:attribute name="OwnerID" type="ca:ST_Guid" use="required"/>
    <xsd:attribute name="OwnerName" type="xsd:string"/>
    <xsd:attribute name="OwnerSIPAddress" type="xsd:string"/>
    <xsd:attribute name="OwnerEmailAddress" type="xsd:string"/>
    <xsd:attribute name="OwnerUserName" type="xsd:string"/>
  </xsd:complexType>
  <xsd:complexType name="CT_Parid">
    <xsd:attribute name="Val" type="ca:ST_LongHexNumber" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_ParaLock">
    <xsd:complexContent>
      <xsd:extension base="ca:CT_LockOwner">
        <xsd:sequence>
          <xsd:element name="ParaId" type="ca:CT_Parid" minOccurs="1" maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attribute name="LockId" type="ca:ST_LongHexNumber" use="required"/>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="CT_LockID">
    <xsd:attribute name="Val" type="ca:ST_LongHexNumber" use="required"/>
    <xsd:attribute name="TimeStamp" type="xsd:dateTime" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_ReservedIDs">
    <xsd:sequence>
      <xsd:element name="LockId" type="ca:CT_LockID" minOccurs="1" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_IDPruneTime">
    <xsd:attribute name="TimeStamp" type="xsd:dateTime" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_UserInfoChanges">
    <xsd:sequence>
      <xsd:element name="UserInfoChange" type="ca:CT_LockOwner" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
```

```

    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_LockIDVal">
    <xsd:attribute name="Val" type="ca:ST_LongHexNumber" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_LockIDChange">
    <xsd:sequence>
      <xsd:element name="LockId" type="ca:CT_LockIDVal" minOccurs="0" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_CALocks">
    <xsd:sequence>
      <xsd:element name="Sync" type="ca:CT_Sync" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="Lock" type="ca:CT_ParaLock" minOccurs="0" maxOccurs="unbounded">
        <xsd:unique name="LockParaIdUniqueness">
          <xsd:selector xpath="./ParaId"/>
          <xsd:field xpath="@Val"/>
        </xsd:unique>
      </xsd:element>
      <xsd:element name="UncommittedLock" type="ca:CT_ParaLock" minOccurs="0"
maxOccurs="unbounded">
        <xsd:unique name="UncommittedLockParaIdUniqueness">
          <xsd:selector xpath="./ParaId"/>
          <xsd:field xpath="@Val"/>
        </xsd:unique>
      </xsd:element>
      <xsd:element name="EphemeralLock" type="ca:CT_ParaLock" minOccurs="0"
maxOccurs="unbounded">
        <xsd:unique name="EphemeralLockParaIdUniqueness">
          <xsd:selector xpath="./ParaId"/>
          <xsd:field xpath="@Val"/>
        </xsd:unique>
      </xsd:element>
      <xsd:element name="DeletedLocks" type="ca:CT_ReservedIDs" minOccurs="0" maxOccurs="1">
        <xsd:unique name="DeletedLocksLockValUniqueness">
          <xsd:selector xpath="./LockId"/>
          <xsd:field xpath="@Val"/>
        </xsd:unique>
      </xsd:element>
      <xsd:element name="IDPruneTime" type="ca:CT_IDPruneTime" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="AutoDeletableLocks" type="ca:CT_LockIDChange" minOccurs="0"
maxOccurs="1">
        <xsd:unique name="AutoDeletableLocksLockValUniqueness">
          <xsd:selector xpath="./LockId"/>
          <xsd:field xpath="@Val"/>
        </xsd:unique>
      </xsd:element>
      <xsd:element name="MakePlaceholder" type="ca:CT_LockIDChange" minOccurs="0"
maxOccurs="1">
        <xsd:unique name="MakePlaceholderLockValUniqueness">
          <xsd:selector xpath="./LockId"/>
          <xsd:field xpath="@Val"/>
        </xsd:unique>
      </xsd:element>
      <xsd:element name="UserInfoChanges" type="ca:CT_UserInfoChanges" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:element name="CoAuthoringLocks" type="ca:CT_CALocks">
    <xsd:unique name="LockIdUniqueness">
      <xsd:selector xpath="/*"/>
      <xsd:field xpath="@LockId"/>
    </xsd:unique>
  </xsd:element>
</xsd: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 updates to those products.

- Microsoft Word 2010
- Microsoft Word 2013
- Microsoft Word 2016
- Microsoft Word 2019
- Microsoft Word 2021

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.

## 7 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](mailto:dochelp@microsoft.com).

Section	Description	Revision class
<a href="#">6</a> Appendix B: Product Behavior	Updated list of supported products.	major



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