[MS-XLSX]:
Excel (.xlsx) Extensions to the Office Open XML SpreadsheetML File Format

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Revision Summary

Date	Revision History	Revision Class	Comments
07/13/2009	0.1	Major	Initial Availability
08/28/2009	0.2	Editorial	Revised and edited the technical content
11/06/2009	0.3	Editorial	Revised and edited the technical content
02/19/2010	1.0	Major	Updated and revised the technical content
03/31/2010	1.01	Editorial	Revised and edited the technical content
04/30/2010	1.02	Editorial	Revised and edited the technical content
06/07/2010	1.03	Editorial	Revised and edited the technical content
06/29/2010	1.04	Editorial	Changed language and formatting in the technical content.
07/23/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
09/27/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
11/15/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
12/17/2010	1.04	No change	No changes to the meaning, language, or formatting of the technical content.
03/18/2011	1.5	Minor	Clarified the meaning of the technical content.
06/10/2011	1.5	No change	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1 Introduction

This document specifies the Excel (.xlsx) Extensions to the Office Open XML SpreadsheetML File Format, which are extensions to the Office Open XML file formats described in [ISO/IEC-29500-1]. The extensions are specified using conventions provided by the Office Open XML file formats described in [ISO/IEC-29500-3]. The extensions are a collection of structures and parts in a container that specify appropriate content, which can include unstructured or semi-structured tables of numbers, text, or both numbers and text, equations or functions, external data connections, charts, and images. Content in such a container is typically organized in a grid-based layout, and often includes numeric data, structured data, and formulas.

1.1 Glossary

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

Augmented Backus-Naur Form (ABNF)
credential
GUID
salt
Unicode
unique identifier (UID)
XML

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

add-in
Boolean
calculated column
cell
cell reference
cell value
character set
color scale
column
condition
conditional formatting
control
cube function
custom filter
custom list
data bar
data marker
data point
data provider
data source
data validation
defined name
descendant
display folder
English Metric Unit (EMU)
field
filter
formula
hash
hidden

hierarchy
icon
icon set
Input Method Editor (IME)
left-to-right
locale
locked
macro sheet
MDX unique name
multidimensional expression (MDX)
Object Linking and Embedding (OLE)
OLAP
OLAP All level
OLAP All member
OLAP allocation
OLAP hierarchy
OLAP level
OLAP measure
OLAP member
OLAP named set
OLAP subselect
OLAP tuple
OLAP weight expression
PivotTable
plot area
point
protection
range
right-to-left
root element
row
security descriptor
selected
shape
sheet
sort
sort condition
sort order
source data
sparkline
workbook
worksheet
XML namespace
XOR obfuscation
zoom level

The following terms are specific to this document:

future function: A function that can be written to but is not implemented in a file.

pixel: A discrete unit of display on a computer display device.

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

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.

[ISO/IEC-29500:2008] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Parts 1-4", Publicly Available Standards, http://standards.iso.org/ittf/PubliclyAvailableStandards/index.html

[ISO/IEC-29500-1] International Organization for Standardization, "Information Technology - Document description and processing languages - Office Open XML File Formats - Part 1: Fundamentals and Markup Language Reference", ISO/IEC PRF 29500-1, 2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51463

[ISO/IEC-29500-3] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 3: Markup Compatibility and Extensibility", 2008, http://www.iso.org/iso/catalogue_detail?csnumber=51461

[ISO/IEC-29500-4] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 4: Transitional Migration Features", ISO/IEC 29500-4:2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51462

[MS-ODRAWXML] Microsoft Corporation, "Office Drawing Extensions to Office Open XML Structure Specification"

[MS-OFFCRYPTO] Microsoft Corporation, "Office Document Cryptography Structure Specification"

[MS-WSO] Microsoft Corporation, "Windows System Overview".

[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

[RFC3066] Alvestrand, H., "Tags for the Identification of Language", RFC 3066, January 2001, http://www.ietf.org/rfc/rfc3066.txt

[RFC5234] Crocker, D., Ed., and Overell, P., "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008, http://www.rfc-editor.org/rfc/rfc5234.txt

[UNICODE5.1] The Unicode Consortium, "The Unicode Standard 5.1.0", http://www.unicode.org/versions/Unicode5.1.0/

[W3C-XML] Bray, T., Paoli, J., Sperberg-McQueen, C.M., Maler, E., Yergeau, F., Eds., "Extensible Markup Language (XML) 1.1 (Second Edition)", W3C Recommendation, August 2006, http://www.w3.org/TR/2006/REC-xml11-20060816/

[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.S., Ed., Beech, D., Ed., Maloney, M., Ed., and Mendelsohn, N., Ed., "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

[ISO/IEC-29500-2] International Organization for Standardization, "Information technology -- Document description and processing languages -- Office Open XML File Formats -- Part 2: Open Packaging Conventions", ISO/IEC 29500-2:2008, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51459

[MS-GLOS] Microsoft Corporation, "Windows Protocols Master Glossary".

[MS-OFCGLOS] Microsoft Corporation, "Microsoft Office Master Glossary".

1.3 Structure Overview (Synopsis)

This document specifies spreadsheet-related extensions to Office Open XML file formats as described in [ISO/IEC-29500-1]. **Workbook** data is contained in a ZIP package conforming to the Open Packaging Conventions as described in [ISO/IEC-29500-2]. Individual files stored in the ZIP package, called parts [ISO/IEC-29500-1], contain information about the content and structure of a workbook, including workbook data, such as **worksheet** definitions. Some parts [ISO/IEC-29500-1]) store information by using **XML** and other parts [ISO/IEC-29500-1] store information by using binary data. The extensions specified in this document use the conventions specified by [ISO/IEC-29500-3], and they are both structures within parts specified by [ISO/IEC-29500-1] and extension parts within the package described by [ISO/IEC-29500-2].

1.4 Relationship to Protocols and Other Structures

This file format is a specified set of extensions to Office Open XML SpreadsheetML, specified in [ISO/IEC-29500-1]. This specification is dependent on the structures and concepts defined in the following references:

- [ISO/IEC-29500-1] for baseline SpreadsheetML persistence format.
- [ISO/IEC-29500-2] for open packaging conventions.
- [ISO/IEC-29500-3] for markup compatibility and extensibility.
- [ISO/IEC-29500-4] for backward compatibility considerations.
- [MS-OFFCRYPTO] for the persistence format for document signing, information rights management, document encryption, and obfuscation.
- [MS-ODRAWXML] for the persistence format for **shapes**.

1.5 Applicability Statement

This document specifies a persistence format for extensions to Office Open XML file formats as described in [ISO/IEC-29500-1] SpreadsheetML documents. The extensions specified in this document allow for expressing additional content and properties, and are not applicable as a stand-alone file format. Each structure specified in this document is integrated with SpreadsheetML documents as described in [ISO/IEC-29500-1] in a particular way, as specified in the section for that structure. All structures are integrated into SpreadsheetML documents in such a way that maintains compatibility with implementations of the Office Open XML file formats as described in [ISO/IEC-29500-1].

The extensions specified in this document do not require any other extensions to be used, and do not prohibit any other extensions from being used in the same document.

This persistence format provides interoperability with applications that create or read documents conforming to this structure.

1.6 Versioning and Localization

This document covers versioning issues in the following areas:

Structure Versions: There is only one version of Excel Extensions to the Office Open XML SpreadsheetML File Format.

Localization: The CT_ProtectedRange structure contains **fields** that specify locale-dependent meaning.

The Security Considerations section also specifies processes and data that are locale-dependent. See each structure and section description for more information.

1.7 Vendor-Extensible Fields

Specified in this document are extensions, using conventions described in [ISO/IEC-29500-3], both as structures within parts described in [ISO/IEC-29500-1] and as extension parts within the package described in [ISO/IEC-29500-2]. Implementations are not required to preserve or remove additional parts when modifying an existing document. See [ISO/IEC-29500-3] for more information.

2 Structures

2.1 Part Enumerations

This section specifies parts in this file format that extend Office Open XML file formats as specified in [ISO/IEC-29500-1].

2.1.1 Control Properties

Content type: application /vnd.ms-excel.controlproperties+xml

Source relationship:
http://schemas.openxmlformats.org/officeDocument/2006/relationships/ctrlProp

An instance of this part type specifies the properties of a form **control** embedded object in the package. A package can contain one or more control properties parts, and each part MUST be the target of an explicit relationship from a **SpreadsheetML** control, as specified in [ISO/IEC-29500-1] section 18.3.1.19.

If this relationship is present, the control MUST NOT have a relationship with an embedded control persistence part, as specified in [ISO/IEC-29500-1] section 15.2.9.

The syntax of the structures contained in this part uses XML Schema, as specified in [XMLSCHEMA1] and [XMLSCHEMA2].

This specification defines and references various **XML namespaces** by using the mechanisms specified in [XMLNS].

The content of this part is XML, and the **root element** for the part is the **formControlPr** element, as specified in section 2.4.32.

2.1.2 Custom Data

Content type: application /binary

Source relationship:
http://schemas.openxmlformats.org/officeDocument/2006/relationships/customData

An instance of this part type specifies user-defined binary data.

A package MUST contain at most one custom data part per custom data properties part, as specified in section 2.1.3, and that part MUST be the target of an implicit relationship from a custom data properties part.

A custom data part MUST NOT have any implicit or explicit relationships to any other part specified by this protocol.

The content of this part consists of user-defined binary data that is stored on behalf of **add-ins**. The content is not specified in this protocol.

2.1.3 Custom Data Properties

Content type: application /vnd.openxmlformats-officedocument.customDataProperties+xml

Source relationship:
http://schemas.openxmlformats.org/officeDocument/2006/relationships/customDataProps

An instance of this part type specifies a single custom data properties part. This part specifies properties for the associated custom data part, as specified in section 2.1.2, specifically a **unique identifier (UID)** for the data storage.

A custom data properties part MUST be the target of an implicit relationship from the workbook part, as specified in [ISO/IEC-29500-1] section 12.3.23.

A custom data properties part is permitted to contain implicit relationships to the custom data part specified in section 2.1.2.

The syntax of the structures contained in this part uses XML Schema, as specified in [XMLSCHEMA1] and [XMLSCHEMA2].

This specification defines and references various XML namespaces by using the mechanisms specified in [XMLNS].

The content of this part is XML, and the root element for the part is the **datastoreItem** element, as specified in section 2.4.33.

2.1.4 Slicer Cache

Content type: application /vnd.ms-excel.slicerCache+xml

Source relationship: http://schemas.microsoft.com/office/2007/relationships/slicerCache

An instance of this part type specifies a single slicer cache part, as specified in section 3.1.1, in the workbook<1>.

A package MUST contain one slicer cache part per **CT_SlicerCache** element, as specified in section 2.6.14, in the workbook part, a specified in [ISO/IEC-29500-1] section 12.3.23, and that part MUST be the target of an explicit relationship from the workbook part.

A slicer cache part MUST NOT have implicit or explicit relationships to any part specified by this protocol.

The syntax of the structures contained in this part uses XML Schema, as specified in [XMLSCHEMA1] and [XMLSCHEMA2].

This specification defines and references various XML namespaces by using the mechanisms specified in [XMLNS].

The content of this part is XML, and the root element for the part is the **slicerCacheDefinition** element, as specified in section 2.4.36.

2.1.5 Slicers

Content type: application/vnd.ms-excel.slicer+xmlSource relationship: http://schemas.microsoft.com/office/2007/relationships/slicer

An instance of this part type specifies the slicer views, as specified in section 2.3.2.2, for a single worksheet<2>.

The presence of a slicers part indicates that there is at least one slicer view on the associated worksheet, and that this part MUST be the target of an explicit relationship from the worksheet part, as specified in [ISO/IEC-29500-1] section 12.3.24.

A slicers part MUST NOT have implicit or explicit relationships to any part specified by this protocol.

The syntax of the structures contained in this part uses XML Schema, as specified in [XMLSCHEMA1] and [XMLSCHEMA2].

This specification defines and references various XML namespaces by using the mechanisms specified in [XMLNS].

The content of this part is XML, and the root element for the part is the **slicers** element, as specified in section 2.4.34.

2.2 Extensions

Extensions are specified by using the conventions provided by Office Open XML file formats as specified in [ISO/IEC-29500-3].The following namespaces are utilized by the extensions specified in this document:

- "http://schemas.microsoft.com/office/drawingml/2010/slicer"
- "http://schemas.microsoft.com/office/spreadsheetml/2009/9/main"
- "http://schemas.microsoft.com/office/spreadsheetml/2009/9/ac"

2.2.1 SpreadsheetML Extensibility Elements

When the global elements f, ref, or sqref are contained within an **ext** ([ISO/IEC-29500-1] section 18.2.7) element and contain **cell references**, an application can adjust these cell references when the worksheet layout changes, even when the containing **ext** element ([ISO/IEC-29500-1] section 18.2.7) is not recognized by the application. See [ISO/IEC-29500-3] section 10.1.2 for more details about how extension lists are used.

2.2.2 Formulas

The following ABNF grammar is used by formulas in other parts of this document.

```
formula = expression

expression= ref-expression / *whitespace nospace-expression *whitespace
ref-expression= *whitespace ref-nospace-expression *whitespace
nospace-expression = "("  expression  ")" / constant / prefix-operator expression /
expression infix-operator expression / expression postfix-operator / function-call
ref-nospace-expression = "("  ref-expression  ")" / ref-constant / ref-expression ref-infix-
operator ref-expression / cell-reference / ref-function-call / name-reference / structure-
reference
constant = error-constant / logical-constant / numerical-constant / string-constant / array-
constant
ref-constant = "#REF!"
error-constant = ref-constant / "#DIV/0!"  /  "#N/A"  /  "#NAME?"  /  "#NULL!" / "#NUM!"  /
"#VALUE!" / "#GETTING_DATA"
logical-constant = "FALSE"  /  "TRUE"
numerical-constant = [neg-sign] significand-part [exponent-part]
significand-part = whole-number-part [fractional-part] / fractional-part
whole-number-part = digit-sequence
fractional-part = full-stop digit-sequence
exponent-part = exponent-character [ sign ] digit-sequence
full-stop = "."
sign = "+"  / neg-sign
neg-sign = "-"
exponent-character = "E"
```

```
digit-sequence = 1*decimal-digit
decimal-digit=  %x30-39
nonzero-decimal-digit = %x31-39
string-constant = double-quote [string-chars] double-quote
string-chars = string-char *string-char
string-char = escaped-double-quote / character ; MUST NOT be a double-quote
escaped-double-quote = 2double-quote
double-quote = %x22
character = as defined by the production Char in the [W3C-XML] section 2.2
array-constant = "{" constant-list-rows "}"
constant-list-rows =  constant-list-row *(semicolon  constant-list-row)
semicolon =  ";"
constant-list-row = constant *(comma constant)
An array-constant MUST NOT contain an array-constant or columns of unequal length or rows of
unequal length.
operator = ":" / comma / space / "^" / "*" / "/" / "+" / "-" / "&" / "=" / "<>" / "<" / "<="
/ ">" / ">=" / "%"
infix-operator = ref-infix-operator / value-infix-operator
value-infix-operator = "^" / "*" / "/" / "+" / "-" / "&"/ "=" / "<>" / "<" / "<=" / ">" /
">="
ref-infix-operator = range-operator / union-operator / intersection-operator
union-operator = comma
intersection-operator = space
range-operator = ":"
postfix-operator =  "%"
prefix-operator =  "+"  /  "-"
cell-reference = external-cell-reference / local-cell-reference
local-cell-reference = A1-reference
external-cell-reference = bang-reference / sheet-range-reference / single-sheet-reference
book-prefix = workbook-index "!"
bang-reference = "!" (A1-reference / "#REF!")
sheet-range-reference = sheet-range "!" A1-reference
single-sheet-prefix = single-sheet "!"
single-sheet-reference = single-sheet-prefix (A1-reference / "#REF!")
single-sheet-area = single-sheet-prefix A1-area
single-sheet = [workbook-index] sheet-name / apostrophe [workbook-index] sheet-name-special
apostrophe
sheet-range = [workbook-index] sheet-name ":" sheet-name / apostrophe [workbook-index] sheet-
name-special ":" sheet-name-special apostrophe
workbook-index = "[" whole-number-part "]"
sheet-name = sheet-name-characters
sheet-name-characters = 1*sheet-name-character
sheet-name-character = character ; MUST NOT be an operator, ', [, ], \, or ?
apostrophe= "'"
space = " "
whitespace = space / %x0D %x0A
sheet-name-special = sheet-name-base-character  [*sheet-name-character-special sheet-name-
base-character]
sheet-name-character-special = 2apostrophe / sheet-name-base-character
sheet-name-base-character = character ; MUST NOT be ', *, [, ], \, :, /, ?, or Unicode
character 'END OF TEXT'
A1-reference = (A1-column ":" A1-column) / (A1-row ":" A1-row) / A1-cell / A1-area
A1-cell = A1-column A1-row
A1-area = A1-cell ":" A1-cell
A1-column = A1-relative-column / A1-absolute-column
A1-relative-column = 1*2letter / A-to-W 2letter / "X" A-to-E letter / "XF" A-to-D
A-to-D = %x41-44 / %x61-64
A-to-E = A-to-D / "E"
A-to-W = %x41-57 / %x61-77
```

```
letter = %x41-5A / %x61-7A
A1-absolute-column = "$" A1-relative-column
A1-row = A1-relative-row / A1-absolute-row
A1-relative-row = row-digit-sequence
row-digit-sequence = nonzero-decimal-digit *5decimal-digit /  "10" %x30-33 4decimal-digit /
"104" %x30-37 3decimal-digit / "1048" %x30-34 2decimal-digit / "10485" %x30-36 decimal-digit
/ "104857" %x30-36
A1-absolute-row = "$" A1-relative-row
cell-function-call = A1-cell "(" argument-list ")"
user-defined-function-call = user-defined-function-name "(" argument-list ")"
user-defined-function-name = name-reference
argument-list = argument *253(comma argument)
comma= ","
argument = *whitespace [argument-expression]
argument-expression= ref-argument-expression / *whitespace nospace-argument-expression
*whitespace
ref-argument-expression= *whitespace ref-argument-nospace-expression *whitespace
nospace-argument-expression = "("  expression  ")" / constant / prefix-operator argument-
expression / argument-expression argument-infix-operator argument-expression / argument-
expression postfix-operator / function-call
ref-argument-nospace-expression = "("  ref-expression  ")" / ref-constant / ref-argument-
expression ref-argument-infix-operator ref-argument-expression / cell-reference / ref-
function-call / name-reference / structure-reference
argument-infix-operator = ref-argument-infix-operator / value-infix-operator

ref-argument-infix-operator = range-operator / intersection-operator
unicode-digit = (any code points which are digits as defined by the Unicode character
properties, [UNICODE5.1] chapter 4)
R1C1-cell-reference = R1C1-row / R1C1-column / R1C1-row R1C1-column / R1C1-column R1C1-row
R1C1-row = "R" row-number

R1C1-column = "C" column-number
column-number = 1-16384
; A string composed of unicode-digits that represents an unsigned integer that is greater
than or equal to 1 and less than or equal to 16384

row-number = 1-1048576
; A string composed of unicode-digits that represents an unsigned integer that is greater
than or equal to 1 and less than or equal to 1048576.

name-reference = name / external-name
external-name = bang-name / (single-sheet-prefix / book-prefix ) name
bang-name = "!" name
name = name-start-character [ name-characters ]
name-start-character = underscore  /  backslash  /  letter / name-base-character
underscore = "_"
backslash = "\"
name-base-character = (any code points which are characters as defined by the Unicode
character properties, [UNICODE5.1] chapter 4 ; MUST NOT be 0x0-0x7F)
name-characters= 1*name-character
name-character = name-start-character / decimal-digit / full-stop  / questionmark
questionmark = "?"
A name MUST NOT have any of the following forms:
TRUE or FALSE
cell-reference
function-list
command-list
future-function-list
R1C1-cell-reference
```

```
structure-reference = [table-identifier] intra-table-reference
table-identifier = [book-prefix] table-name
table-name = name
table-name is the name of the table the structure reference refers to. If it is missing, the
formula containing the structure reference MUST be entered into a cell which belongs to a
table and that table's name is used as the table-name. table-name MUST be the value of the
displayName attribute of some table element ([ISO/IEC-29500-1] section 18.5.1.2). It MUST NOT
be any other user-defined name.
intra-table-reference = spaced-lbracket inner-reference spaced-rbracket / keyword / ("["
[simple-column-name] "]")
inner-reference = keyword-list / ([keyword-list spaced-comma] column-range)
keyword = "[#All]" / "[#Data]" / "[#Headers]" / "[#Totals]" / "[#This Row]"
keyword-list = keyword / ("[#Headers]" spaced-comma "[#Data]") / ("[#Data]" spaced-comma
"[#Totals]")
column-range = column [":" column]
column = simple-column-name / ("[" *space simple-column-name *space "]")
simple-column-name = [any-nospace-column-character *any-column-character] any-nospace-column-
character
escape-column-character = tick / "[" / "]" / "#"
tick = %x27
unescaped-column-character = character   ; MUST NOT match escape-column-character or space
any-column-character = any-nospace-column-character / space
any-nospace-column-character = unescaped-column-character / (tick escape-column-character)
spaced-comma = [space] comma [space]
spaced-lbracket = "[" [space]
spaced-rbracket = [space] "]"
function-list = "ABS" / "ABSREF" / "ACCRINT" / "ACCRINTM" / "ACOS" / "ACOSH" / "ACTIVE.CELL"
/ "ADD.BAR" / "ADD.COMMAND" / "ADD.MENU" / "ADD.TOOLBAR" / "ADDRESS" / "AMORDEGRC" /
"AMORLINC" / "AND" / "APP.TITLE" / "AREAS" / "ARGUMENT" / "ASC" / "ASIN" / "ASINH" / "ATAN" /
"ATAN2" / "ATANH" / "AVEDEV" / "AVERAGE" / "AVERAGEA" / "AVERAGEIF" / "AVERAGEIFS" /
"BAHTTEXT" / "BESSELI" / "BESSELJ" / "BESSELK" / "BESSELY" / "BETADIST" / "BETAINV" /
"BIN2DEC" / "BIN2HEX" / "BIN2OCT" / "BINOMDIST" / "BREAK" / "CALL" / "CALLER" / "CANCEL.KEY"
/ "CEILING" / "CELL" / "CHAR" / "CHECK.COMMAND" / "CHIDIST" / "CHIINV" / "CHITEST" / "CHOOSE"
/ "CLEAN" / "CODE" / "COLUMN" / "COLUMNS" / "COMBIN" / "COMPLEX" / "CONCATENATE" /
"CONFIDENCE" / "CONVERT" / "CORREL" / "COS" / "COSH" / "COUNT" / "COUNTA" / "COUNTBLANK" /
"COUNTIF" / "COUNTIFS" / "COUPDAYBS" / "COUPDAYS" / "COUPDAYSNC" / "COUPNCD" / "COUPNUM" /
"COUPPCD" / "COVAR" / "CREATE.OBJECT" / "CRITBINOM" / "CUBEKPIMEMBER" / "CUBEMEMBER" /
"CUBEMEMBERPROPERTY" / "CUBERANKEDMEMBER" / "CUBESET" / "CUBESETCOUNT" / "CUBEVALUE" /
"CUMIPMT" / "CUMPRINC" / "CUSTOM.REPEAT" / "CUSTOM.UNDO" / "DATE" / "DATEDIF" / "DATESTRING"
/ "DATEVALUE" / "DAVERAGE" / "DAY" / "DAYS360" / "DB" / "DBCS" / "DCOUNT" / "DCOUNTA" / "DDB"
/ "DEC2BIN" / "DEC2HEX" / "DEC2OCT" / "DEGREES" / "DELETE.BAR" / "DELETE.COMMAND" /
"DELETE.MENU" / "DELETE.TOOLBAR" / "DELTA" / "DEREF" / "DEVSQ" / "DGET" / "DIALOG.BOX" /
"DIRECTORY" / "DISC" / "DMAX" / "DMIN" / "DOCUMENTS" / "DOLLAR" / "DOLLARDE" / "DOLLARFR" /
"DPRODUCT" / "DSTDEV" / "DSTDEVP" / "DSUM" / "DURATION" / "DVAR" / "DVARP" / "ECHO" / "EDATE"
/ "EFFECT" / "ELSE" / "ELSE.IF" / "ENABLE.COMMAND" / "ENABLE.TOOL" / "END.IF" / "EOMONTH" /
"ERF" / "ERFC" / "ERROR" / "ERROR.TYPE" / "EVALUATE" / "EVEN" / "EXACT" / "EXEC" / "EXECUTE"
/ "EXP" / "EXPONDIST" / "FACT" / "FACTDOUBLE" / "FALSE" / "FCLOSE" / "FDIST" / "FILES" /
"FIND" / "FINDB" / "FINV" / "FISHER" / "FISHERINV" / "FIXED" / "FLOOR" / "FOPEN" / "FOR" /
"FOR.CELL" / "FORECAST" / "FORMULA.CONVERT" / "FPOS" / "FREAD" / "FREADLN" / "FREQUENCY" /
"FSIZE" / "FTEST" / "FV" / "FVSCHEDULE" / "FWRITE" / "FWRITELN" / "GAMMADIST" / "GAMMAINV" /
"GAMMALN" / "GCD" / "GEOMEAN" / "GESTEP" / "GET.BAR" / "GET.CELL" / "GET.CHART.ITEM" /
"GET.DEF" / "GET.DOCUMENT" / "GET.FIELD" / "GET.FORMULA" / "GET.ITEM" / "GET.LINK.INFO" /
"GET.MOVIE" / "GET.NAME" / "GET.NOTE" / "GET.OBJECT" / "GET.TOOL" / "GET.TOOLBAR" /
"GET.VIEW" / "GET.WINDOW" / "GET.WORKBOOK" / "GET.WORKSPACE" / "GETPIVOTDATA" / "GOTO" /
"GROUP" / "GROWTH" / "HALT" / "HARMEAN" / "HELP" / "HEX2BIN" / "HEX2DEC" / "HEX2OCT" /
"HLOOKUP" / "HOUR" / "HYPERLINK" / "HYPGEOMDIST" / "IF" / "IFERROR" / "IMABS" / "IMAGINARY" /
"IMARGUMENT" / "IMCONJUGATE" / "IMCOS" / "IMDIV" / "IMEXP" / "IMLN" / "IMLOG10" / "IMLOG2" /
"IMPOWER" / "IMPRODUCT" / "IMREAL" / "IMSIN" / "IMSQRT" / "IMSUB" / "IMSUM" / "INDEX" /
"INDIRECT" / "INFO" / "INITIATE" / "INPUT" / "INT" / "INTERCEPT" / "INTRATE" / "IPMT" / "IRR"
/ "ISBLANK" / "ISERR" / "ISERROR" / "ISEVEN" / "ISLOGICAL" / "ISNA" / "ISNONTEXT" /
"ISNUMBER" / "ISODD" / "ISPMT" / "ISREF" / "ISTEXT" / "ISTHAIDIGIT" / "KURT" / "LARGE" /
"LAST.ERROR" / "LCM" / "LEFT" / "LEFTB" / "LEN" / "LENB" / "LINEST" / "LINKS" / "LN" / "LOG"
/ "LOG10" / "LOGEST" / "LOGINV" / "LOGNORMDIST" / "LOOKUP" / "LOWER" / "MATCH" / "MAX" /
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"MAXA" / "MDETERM" / "MDURATION" / "MEDIAN" / "MID" / "MIDB" / "MIN" / "MINA" / "MINUTE" /
"MINVERSE" / "MIRR" / "MMULT" / "MOD" / "MODE" / "MONTH" / "MOVIE.COMMAND" / "MROUND" /
"MULTINOMIAL" / "N" / "NA" / "NAMES" / "NEGBINOMDIST" / "NETWORKDAYS" / "NEXT" / "NOMINAL" /
"NORMDIST" / "NORMINV" / "NORMSDIST" / "NORMSINV" / "NOT" / "NOTE" / "NOW" / "NPER" / "NPV" /
"NUMBERSTRING" / "OCT2BIN" / "OCT2DEC" / "OCT2HEX" / "ODD" / "ODDFPRICE" / "ODDFYIELD" /
"ODDLPRICE" / "ODDLYIELD" / "OFFSET" / "OPEN.DIALOG" / "OPTIONS.LISTS.GET" / "OR" / "PAUSE" /
"PEARSON" / "PERCENTILE" / "PERCENTRANK" / "PERMUT" / "PHONETIC" / "PI" / "PMT" / "POISSON" /
"POKE" / "POWER" / "PPMT" / "PRESS.TOOL" / "PRICE" / "PRICEDISC" / "PRICEMAT" / "PROB" /
"PRODUCT" / "PROPER" / "PV" / "QUARTILE" / "QUOTIENT" / "RADIANS" / "RAND" / "RANDBETWEEN" /
"RANK" / "RATE" / "RECEIVED" / "REFTEXT" / "REGISTER" / "REGISTER.ID" / "RELREF" /
"RENAME.COMMAND" / "REPLACE" / "REPLACEB" / "REPT" / "REQUEST" / "RESET.TOOLBAR" / "RESTART"
/ "RESULT" / "RESUME" / "RETURN" / "RIGHT" / "RIGHTB" / "ROMAN" / "ROUND" / "ROUNDBAHTDOWN" /
"ROUNDBAHTUP" / "ROUNDDOWN" / "ROUNDUP" / "ROW" / "ROWS" / "RSQ" / "RTD" / "SAVE.DIALOG" /
"SAVE.TOOLBAR" / "SCENARIO.GET" / "SEARCH" / "SEARCHB" / "SECOND" / "SELECTION" / "SERIES" /
"SERIESSUM" / "SET.NAME" / "SET.VALUE" / "SHOW.BAR" / "SIGN" / "SIN" / "SINH" / "SKEW" /
"SLN" / "SLOPE" / "SMALL" / "SPELLING.CHECK" / "SPREADBASE.DATA.FIELD" / "SQRT" / "SQRTPI" /
"STANDARDIZE" / "STDEV" / "STDEVA" / "STDEVP" / "STDEVPA" / "STEP" / "STEYX" / "SUBSTITUTE" /
"SUBTOTAL" / "SUM" / "SUMIF" / "SUMIFS" / "SUMPRODUCT" / "SUMSQ" / "SUMX2MY2" / "SUMX2PY2" /
"SUMXMY2" / "SYD" / "T" / "TAN" / "TANH" / "TBILLEQ" / "TBILLPRICE" / "TBILLYIELD" / "TDIST"
/ "TERMINATE" / "TEXT" / "TEXT.BOX" / "TEXTREF" / "THAIDAYOFWEEK" / "THAIDIGIT" /
"THAIMONTHOFYEAR" / "THAINUMSOUND" / "THAINUMSTRING" / "THAISTRINGLENGTH" / "THAIYEAR" /
"TIME" / "TIMEVALUE" / "TINV" / "TODAY" / "TRANSPOSE" / "TREND" / "TRIM" / "TRIMMEAN" /
"TRUE" / "TRUNC" / "TTEST" / "TYPE" / "UNREGISTER" / "UPPER" / "USDOLLAR" / "VALUE" / "VAR" /
"VARA" / "VARP" / "VARPA" / "VDB" / "VIEW.GET" / "VLOOKUP" / "VOLATILE" / "WEEKDAY" /
"WEEKNUM" / "WEIBULL" / "WHILE" / "WINDOW.TITLE" / "WINDOWS" / "WORKDAY" / "XIRR" / "XNPV" /
"YEAR" / "YEARFRAC" / "YIELD" / "YIELDDISC" / "YIELDMAT" / "ZTEST"
command-list = ("A1.R1C1" / "ACTIVATE" / "ACTIVATE.NEXT" / "ACTIVATE.NOTES" / "ACTIVATE.PREV"
/ "ACTIVE.CELL.FONT" / "ADD.ARROW" / "ADD.CHART.AUTOFORMAT" / "ADD.LIST.ITEM" / "ADD.OVERLAY"
/ "ADD.PRINT.AREA" / "ADD.TOOL" / "ADDIN.MANAGER" / "ALERT" / "ALIGNMENT" / "APP.ACTIVATE" /
"APP.ACTIVATE.MICROSOFT" / "APP.MAXIMIZE" / "APP.MINIMIZE" / "APP.MOVE" / "APP.RESTORE" /
"APP.SIZE" / "APPLY.NAMES" / "APPLY.STYLE" / "ARRANGE.ALL" / "ASSIGN.TO.OBJECT" /
"ASSIGN.TO.TOOL" / "ATTACH.TEXT" / "ATTACH.TOOLBARS" / "ATTRIBUTES" / "AUTO.OUTLINE" /
"AUTOCORRECT" / "AXES" / "BEEP" / "BORDER" / "BRING.TO.FRONT" / "CALCULATE.DOCUMENT" /
"CALCULATE.NOW" / "CALCULATION" / "CANCEL.COPY" / "CELL.PROTECTION" / "CHANGE.LINK" /
"CHART.ADD.DATA" / "CHART.TREND" / "CHART.WIZARD" / "CHECKBOX.PROPERTIES" / "CLEAR" /
"CLEAR.OUTLINE" / "CLEAR.PRINT.AREA" / "CLEAR.ROUTING.SLIP" / "CLOSE" / "CLOSE.ALL" /
"COLOR.PALETTE" / "COLUMN.WIDTH" / "COMBINATION" / "CONSOLIDATE" / "CONSTRAIN.NUMERIC" /
"COPY" / "COPY.CHART" / "COPY.PICTURE" / "COPY.TOOL" / "CREATE.NAMES" / "CREATE.PUBLISHER" /
"CUSTOMIZE.TOOLBAR" / "CUT" / "DATA.DELETE" / "DATA.FIND" / "DATA.FIND.NEXT" /
"DATA.FIND.PREV" / "DATA.FORM" / "DATA.LABEL" / "DATA.SERIES" / "DEFINE.NAME" /
"DEFINE.STYLE" / "DELETE.ARROW" / "DELETE.CHART.AUTOFORMAT" / "DELETE.FORMAT" / "DELETE.NAME"
/ "DELETE.NOTE" / "DELETE.OVERLAY" / "DELETE.STYLE" / "DELETE.TOOL" / "DEMOTE" /
"DISABLE.INPUT" / "DISPLAY" / "DUPLICATE" / "EDIT.COLOR" / "EDIT.DELETE" / "EDIT.OBJECT" /
"EDIT.REPEAT" / "EDIT.SERIES" / "EDIT.TOOL" / "EDITBOX.PROPERTIES" / "EDITION.OPTIONS" /
"ENABLE.OBJECT" / "ENABLE.TIPWIZARD" / "ENTER.DATA" / "ERRORBAR.X" / "ERRORBAR.Y" /
"EXTEND.POLYGON" / "EXTRACT" / "FILE.CLOSE" / "FILE.DELETE" / "FILL.AUTO" / "FILL.DOWN" /
"FILL.GROUP" / "FILL.LEFT" / "FILL.RIGHT" / "FILL.UP" / "FILTER" / "FILTER.ADVANCED" /
"FILTER.SHOW.ALL" / "FIND.FILE" / "FONT" / "FONT.PROPERTIES" / "FORMAT.AUTO" / "FORMAT.CHART"
/ "FORMAT.CHARTTYPE" / "FORMAT.FONT" / "FORMAT.LEGEND" / "FORMAT.MAIN" / "FORMAT.MOVE" /
"FORMAT.NUMBER" / "FORMAT.OVERLAY" / "FORMAT.SHAPE" / "FORMAT.SIZE" / "FORMAT.TEXT" /
"FORMULA" / "FORMULA.ARRAY" / "FORMULA.FILL" / "FORMULA.FIND" / "FORMULA.FIND.NEXT" /
"FORMULA.FIND.PREV" / "FORMULA.GOTO" / "FORMULA.REPLACE" / "FREEZE.PANES" / "FULL" /
"FULL.SCREEN" / "FUNCTION.WIZARD" / "GALLERY.3D.AREA" / "GALLERY.3D.BAR" /
"GALLERY.3D.COLUMN" / "GALLERY.3D.LINE" / "GALLERY.3D.PIE" / "GALLERY.3D.SURFACE" /
"GALLERY.AREA" / "GALLERY.BAR" / "GALLERY.COLUMN" / "GALLERY.CUSTOM" / "GALLERY.DOUGHNUT" /
"GALLERY.LINE" / "GALLERY.PIE" / "GALLERY.RADAR" / "GALLERY.SCATTER" / "GOAL.SEEK" /
"GRIDLINES" / "HIDE" / "HIDE.DIALOG" / "HIDE.OBJECT" / "HIDEALL.INKANNOTS" / "HIDEALL.NOTES"
/ "HIDECURR.NOTE" / "HLINE" / "HPAGE" / "HSCROLL" / "INSERT" / "INSERT.MAP.OBJECT" /
"INSERT.OBJECT" / "INSERT.PICTURE" / "INSERT.TITLE" / "INSERTDATATABLE" / "JUSTIFY" /
"LABEL.PROPERTIES" / "LAYOUT" / "LEGEND" / "LINE.PRINT" / "LINK.COMBO" / "LINK.FORMAT" /
"LIST.NAMES" / "LISTBOX.PROPERTIES" / "MACRO.OPTIONS" / "MAIL.ADD.MAILER" /
"MAIL.DELETE.MAILER" / "MAIL.EDIT.MAILER" / "MAIL.FORWARD" / "MAIL.LOGOFF" / "MAIL.LOGON" /
"MAIL.NEXT.LETTER" / "MAIL.REPLY" / "MAIL.REPLY.ALL" / "MAIL.SEND.MAILER" / "MAIN.CHART" /
"MAIN.CHART.TYPE" / "MENU.EDITOR" / "MERGE.STYLES" / "MESSAGE" / "MOVE.BRK" / "MOVE.TOOL" /
"MSOCHECKS" / "NEW" / "NEW.WINDOW" / "NEWWEBQUERY" / "NORMAL" / "OBJECT.PROPERTIES" /
"OBJECT.PROTECTION" / "ON.DATA" / "ON.DOUBLECLICK" / "ON.ENTRY" / "ON.KEY" / "ON.RECALC" /
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"ON.SHEET" / "ON.TIME" / "ON.WINDOW" / "OPEN" / "OPEN.LINKS" / "OPEN.MAIL" / "OPEN.TEXT" /
"OPTIONS.CALCULATION" / "OPTIONS.CHART" / "OPTIONS.EDIT" / "OPTIONS.GENERAL" /
"OPTIONS.LISTS.ADD" / "OPTIONS.LISTS.DELETE" / "OPTIONS.ME" / "OPTIONS.MENONO" /
"OPTIONS.SAVE" / "OPTIONS.SPELL" / "OPTIONS.TRANSITION" / "OPTIONS.VIEW" / "OUTLINE" /
"OVERLAY" / "OVERLAY.CHART.TYPE" / "PAGE.SETUP" / "PARSE" / "PASTE" / "PASTE.LINK" /
"PASTE.PICTURE" / "PASTE.PICTURE.LINK" / "PASTE.SPECIAL" / "PASTE.TOOL" / "PATTERNS" /
"PICKLIST" / "PIVOT.ADD.FIELDS" / "PIVOT.FIELD" / "PIVOT.FIELD.GROUP" /
"PIVOT.FIELD.PROPERTIES" / "PIVOT.FIELD.UNGROUP" / "PIVOT.ITEM" / "PIVOT.ITEM.PROPERTIES" /
"PIVOT.REFRESH" / "PIVOT.SHOW.PAGES" / "PIVOT.TABLE.CHART" / "PIVOT.TABLE.WIZARD" /
"POST.DOCUMENT" / "PRECISION" / "PREFERRED" / "PRINT" / "PRINT.PREVIEW" / "PRINTER.SETUP" /
"PROMOTE" / "PROTECT.DOCUMENT" / "PROTECT.REVISIONS" / "PUSHBUTTON.PROPERTIES" / "QUIT" /
"REMOVE.LIST.ITEM" / "REMOVE.PAGE.BREAK" / "RENAME.OBJECT" / "REPLACE.FONT" / "RESET.TOOL" /
"RM.PRINT.AREA" / "ROUTE.DOCUMENT" / "ROUTING.SLIP" / "ROW.HEIGHT" / "RUN" / "SAVE" /
"SAVE.AS" / "SAVE.COPY.AS" / "SAVE.NEW.OBJECT" / "SAVE.WORKBOOK" / "SAVE.WORKSPACE" / "SCALE"
/ "SCENARIO.ADD" / "SCENARIO.CELLS" / "SCENARIO.DELETE" / "SCENARIO.EDIT" / "SCENARIO.MERGE"
/ "SCENARIO.SHOW" / "SCENARIO.SHOW.NEXT" / "SCENARIO.SUMMARY" / "SCROLLBAR.PROPERTIES" /
"SELECT" / "SELECT.ALL" / "SELECT.CHART" / "SELECT.END" / "SELECT.LAST.CELL" /
"SELECT.LIST.ITEM" / "SELECT.PLOT.AREA" / "SELECT.SPECIAL" / "SEND.KEYS" / "SEND.MAIL" /
"SEND.TO.BACK" / "SERIES.AXES" / "SERIES.ORDER" / "SERIES.X" / "SERIES.Y" /
"SET.CONTROL.VALUE" / "SET.CRITERIA" / "SET.DATABASE" / "SET.DIALOG.DEFAULT" /
"SET.DIALOG.FOCUS" / "SET.EXTRACT" / "SET.LIST.ITEM" / "SET.PAGE.BREAK" / "SET.PREFERRED" /
"SET.PRINT.AREA" / "SET.PRINT.TITLES" / "SET.UPDATE.STATUS" / "SHARE" / "SHARE.NAME" /
"SHEET.BACKGROUND" / "SHORT.MENUS" / "SHOW.ACTIVE.CELL" / "SHOW.CLIPBOARD" / "SHOW.DETAIL" /
"SHOW.DIALOG" / "SHOW.INFO" / "SHOW.LEVELS" / "SHOW.TOOLBAR" / "SORT" / "SORT.SPECIAL" /
"SOUND.NOTE" / "SOUND.PLAY" / "SPELLING" / "SPLIT" / "STANDARD.FONT" / "STANDARD.WIDTH" /
"STYLE" / "SUBSCRIBE.TO" / "SUBTOTAL.CREATE" / "SUBTOTAL.REMOVE" / "SUMMARY.INFO" /
"TAB.ORDER" / "TABLE" / "TEXT.TO.COLUMNS" / "TRACER.CLEAR" / "TRACER.DISPLAY" /
"TRACER.ERROR" / "TRACER.NAVIGATE" / "TRAVERSE.NOTES" / "UNDO" / "UNGROUP" / "UNGROUP.SHEETS"
/ "UNHIDE" / "UNLOCKED.NEXT" / "UNLOCKED.PREV" / "UNPROTECT.REVISIONS" / "UPDATE.LINK" /
"VBA.INSERT.FILE" / "VBA.MAKE.ADDIN" / "VBA.PROCEDURE.DEFINITION" / "VBAActivate" / "VIEW.3D"
/ "VIEW.DEFINE" / "VIEW.DELETE" / "VIEW.SHOW" / "VLINE" / "VPAGE" / "VSCROLL" / "WAIT" /
"WEB.PUBLISH" / "WINDOW.MAXIMIZE" / "WINDOW.MINIMIZE" / "WINDOW.MOVE" / "WINDOW.RESTORE" /
"WINDOW.SIZE" / "WORKBOOK.ACTIVATE" / "WORKBOOK.ADD" / "WORKBOOK.COPY" / "WORKBOOK.DELETE" /
"WORKBOOK.HIDE" / "WORKBOOK.INSERT" / "WORKBOOK.MOVE" / "WORKBOOK.NAME" / "WORKBOOK.NEW" /
"WORKBOOK.NEXT" / "WORKBOOK.OPTIONS" / "WORKBOOK.PREV" / "WORKBOOK.PROTECT" /
"WORKBOOK.SCROLL" / "WORKBOOK.SELECT" / "WORKBOOK.TAB.SPLIT" / "WORKBOOK.UNHIDE" /
"WORKGROUP" / "WORKGROUP.OPTIONS" / "WORKSPACE" / "ZOOM") ["?"]
future-function-list = ("_xlfn." ("AGGREGATE" / "BETA.DIST" / "BETA.INV" / "BINOM.DIST" /
"BINOM.INV" / "CEILING.PRECISE" / "CHISQ.DIST" / "CHISQ.DIST.RT" / "CHISQ.INV" /
"CHISQ.INV.RT" / "CHISQ.TEST" / "CONFIDENCE.NORM" / "CONFIDENCE.T" / "COVARIANCE.P" /
"COVARIANCE.S" / "ERF.PRECISE" / "ERFC.PRECISE" / "EXPON.DIST" / "F.DIST" / "F.DIST.RT" /
"F.INV" / "F.INV.RT" / "F.TEST" / "FLOOR.PRECISE" / "GAMMA.DIST" / "GAMMA.INV" /
"GAMMALN.PRECISE" / "HYPGEOM.DIST" / "LOGNORM.DIST" / "LOGNORM.INV" / "MODE.MULT" /
"MODE.SNGL" / "NEGBINOM.DIST" / "NORM.DIST" / "NORM.INV" / "NORM.S.DIST" / "NORM.S.INV" /
"PERCENTILE.EXC" / "PERCENTILE.INC" / "PERCENTRANK.EXC" / "PERCENTRANK.INC" / "POISSON.DIST"
/ "QUARTILE.EXC" / "QUARTILE.INC" / "RANK.AVG" / "RANK.EQ" / "STDEV.P" / "STDEV.S" / "T.DIST"
/ "T.DIST.2T" / "T.DIST.RT" / "T.INV" / "T.INV.2T" / "T.TEST" / "VAR.P" / "VAR.S" /
"WEIBULL.DIST" / "Z.TEST")) / "ECMA.CEILING" / "ISO.CEILING" / "NETWORKDAYS.INTL" /
"WORKDAY.INTL"
ref-function-call = "CHOOSE" choose-params / "IF" if-params / "INDEX" index-params /
"INDIRECT" indirect-params / "OFFSET" offset-params
future-function-call = ("_xlfn."(("AGGREGATE" aggregate-params) / ("BETA.DIST" beta-dist-
params) / ("BETA.INV" beta-inv-params) / ("BINOM.DIST" binom-dist-params) / ("BINOM.INV"
binom-inv-params) / ("CEILING.PRECISE" ceiling-precise-params) / ("CHISQ.DIST" chisq-dist-
params) / ("CHISQ.DIST.RT" chisq-dist-rt-params) / ("CHISQ.INV" chisq-inv-params) /
("CHISQ.INV.RT" chisq-inv-rt-params) / ("CHISQ.TEST" chisq-test-params) / ("CONFIDENCE.NORM"
confidence-norm-params) / ("CONFIDENCE.T" confidence-t-params) / ("COVARIANCE.P" covariance-
p-params) / ("COVARIANCE.S" covariance-s-params) / ("ERF.PRECISE" erf-precise-params) /
("ERFC.PRECISE" erfc-precise-params) / ("EXPON.DIST" expon-dist-params) / ("F.DIST" f-dist-
params) / ("F.DIST.RT" f-dist-rt-params) / ("F.INV" f-inv-params) / ("F.INV.RT" f-inv-rt-
params) / ("F.TEST" f-test-params) / ("FLOOR.PRECISE" floor-precise-params) / ("GAMMA.DIST"
gamma-dist-params) / ("GAMMA.INV" gamma-inv-params) / ("GAMMALN.PRECISE" gammaln-precise-
params) / ("HYPGEOM.DIST" hypgeom-dist-params) / ("LOGNORM.DIST" lognorm-dist-params) /
("LOGNORM.INV" lognorm-inv-params) / ("MODE.MULT" mode-mult-params) / ("MODE.SNGL" mode-sngl-
params) / ("NEGBINOM.DIST" negbinom-dist-params) / ("NORM.DIST" norm-dist-params) /
("NORM.INV" norm-inv-params) / ("NORM.S.DIST" norm-s-dist-params) / ("NORM.S.INV" norm-s-inv-
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params) / ("PERCENTILE.EXC" percentile-exc-params) / ("PERCENTILE.INC" percentile-inc-params)
/ ("PERCENTRANK.EXC" percentrank-exc-params) / ("PERCENTRANK.INC" percentrank-inc-params) /
("POISSON.DIST" poisson-dist-params) / ("QUARTILE.EXC" quartile-exc-params) / ("QUARTILE.INC"
quartile-inc-params) / ("RANK.AVG" rank-avg-params) / ("RANK.EQ" rank-eq-params) / ("STDEV.P"
stdev-p-params) / ("STDEV.S" stdev-s-params) / ("T.DIST" t-dist-params) / ("T.DIST.2T" t-
dist-2t-params) / ("T.DIST.RT" t-dist-rt-params) / ("T.INV" t-inv-params) / ("T.INV.2T" t-
inv-2t-params) / ("T.TEST" t-test-params) / ("VAR.P" var-p-params) / ("VAR.S" var-s-params) /
("WEIBULL.DIST" weibull-dist-params) / ("Z.TEST" z-test-params))) / ("ECMA.CEILING" ecma-
ceiling-params) / ("ISO.CEILING" iso-ceiling-params) / ("NETWORKDAYS.INTL" networkdays-intl-
params) / ("WORKDAY.INTL" workday-intl-params)
function-call = ref-function-call / future-function-call / cell-function-call / user-defined-
function-call / "ABS" abs-params / "ACCRINT" accrint-params / "ACCRINTM" accrintm-params /
"ACOS" acos-params / "ACOSH" acosh-params / "ADDRESS" address-params / "AMORDEGRC" amordegrc-
params / "AMORLINC" amorlinc-params / "AND" and-params / "AREAS" areas-params / "ASC" asc-
params / "ASIN" asin-params / "ASINH" asinh-params / "ATAN" atan-params / "ATAN2" atan2-
params / "ATANH" atanh-params / "AVEDEV" avedev-params / "AVERAGE" average-params /
"AVERAGEA" averagea-params / "AVERAGEIF" averageif-params / "AVERAGEIFS" averageifs-params /
"BAHTTEXT" bahttext-params / "BESSELI" besseli-params / "BESSELJ" besselj-params / "BESSELK"
besselk-params / "BESSELY" bessely-params / "BETADIST" betadist-params / "BETAINV" betainv-
params / "BIN2DEC" bin2dec-params / "BIN2HEX" bin2hex-params / "BIN2OCT" bin2oct-params /
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edate-params = "(" argument "," argument ")"
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mina-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
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minverse-params = "(" argument-expression ")"
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mmult-params = "(" argument "," argument ")"
mod-params = "(" argument "," argument ")"
mode-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
mode-mult-params = "(" (argument-expression / (argument 1*253("," argument))) ")"
mode-sngl-params = "(" (argument-expression / (argument 1*253("," argument))) ")"
month-params = "(" argument-expression ")"
mround-params = "(" argument "," argument ")"
multinomial-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
n-params = "(" argument-expression ")"
na-params = emptyparams
negbinom-dist-params = "(" argument "," argument "," argument "," argument ")"
negbinomdist-params = "(" argument "," argument "," argument ")"
networkdays-params = "(" argument "," argument ["," argument] ")"
networkdays-intl-params = "(" argument "," argument ["," argument ["," argument]] ")"
nominal-params = "(" argument "," argument ")"
norm-dist-params = "(" argument "," argument "," argument "," argument ")"
norm-inv-params = "(" argument "," argument "," argument ")"
norm-s-dist-params = "(" argument "," argument ")"
norm-s-inv-params = "(" argument-expression ")"
normdist-params = "(" argument "," argument "," argument "," argument ")"
norminv-params = "(" argument "," argument "," argument ")"
normsdist-params = "(" argument-expression ")"
normsinv-params = "(" argument-expression ")"
not-params = "(" argument-expression ")"
now-params = emptyparams
nper-params = "(" argument "," argument "," argument ["," argument ["," argument]] ")"
npv-params = "(" argument "," argument *253("," argument) ")"
numberstring-params = "(" argument "," argument ")"
oct2bin-params = "(" (argument-expression / (argument "," argument)) ")"
oct2dec-params = "(" argument-expression ")"
oct2hex-params = "(" (argument-expression / (argument "," argument)) ")"
odd-params = "(" argument-expression ")"
oddfprice-params = "(" argument "," argument "," argument "," argument "," argument "," argument "," argument "," argument ["," argument] ")"
oddfyield-params = "(" argument "," argument "," argument "," argument "," argument "," argument "," argument "," argument ["," argument] ")"
oddlprice-params = "(" argument "," argument "," argument "," argument "," argument "," argument "," argument ["," argument] ")"
oddlyield-params = "(" argument "," argument "," argument "," argument "," argument "," argument "," argument ["," argument] ")"
offset-params = "(" ref-argument-expression  "," argument "," argument ["," argument ["," argument]] ")"
or-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
pearson-params = "(" argument "," argument ")"
percentile-params = "(" argument "," argument ")"
```

```
percentile-exc-params = "(" argument "," argument ")"
percentile-inc-params = "(" argument "," argument ")"
percentrank-params = "(" argument "," argument ["," argument] ")"
percentrank-exc-params = "(" argument "," argument ["," argument] ")"
percentrank-inc-params = "(" argument "," argument ["," argument] ")"
permut-params = "(" argument "," argument ")"
phonetic-params = "(" ref-argument-expression  ")"
pi-params = emptyparams
pmt-params = "(" argument "," argument "," argument ["," argument ["," argument]] ")"
poisson-params = "(" argument "," argument "," argument ")"
poisson-dist-params = "(" argument "," argument "," argument ")"
power-params = "(" argument "," argument ")"
ppmt-params = "(" argument "," argument "," argument "," argument ["," argument ["," 
argument]] ")"
price-params = "(" argument "," argument "," argument "," argument "," argument "," argument 
["," argument] ")"
pricedisc-params = "(" argument "," argument "," argument "," argument ["," argument] ")"
pricemat-params = "(" argument "," argument "," argument "," argument "," argument ["," 
argument] ")"
prob-params = "(" argument "," argument "," argument ["," argument] ")"
product-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
proper-params = "(" argument-expression ")"
pv-params = "(" argument "," argument "," argument ["," argument ["," argument]] ")"
quartile-params = "(" argument "," argument ")"
quartile-exc-params = "(" argument "," argument ")"
quartile-inc-params = "(" argument "," argument ")"
quotient-params = "(" argument "," argument ")"
radians-params = "(" argument-expression ")"
rand-params = emptyparams
randbetween-params = "(" argument "," argument ")"
rank-params = "(" argument "," ref-argument-expression  ["," argument] ")"
rank-avg-params = "(" argument "," ref-argument-expression  ["," argument] ")"
rank-eq-params = "(" argument "," ref-argument-expression  ["," argument] ")"
rate-params = "(" argument "," argument "," argument ["," argument ["," argument ["," 
argument]]] ")"
received-params = "(" argument "," argument "," argument "," argument ["," argument] ")"
replace-params = "(" argument "," argument "," argument "," argument ")"
replaceb-params = "(" argument "," argument "," argument "," argument ")"
rept-params = "(" argument "," argument ")"
right-params = "(" (argument-expression / (argument "," argument)) ")"
rightb-params = "(" (argument-expression / (argument "," argument)) ")"
roman-params = "(" (argument-expression / (argument "," argument)) ")"
round-params = "(" argument "," argument ")"
roundbahtdown-params = "(" argument-expression ")"
roundbahtup-params = "(" argument-expression ")"
rounddown-params = "(" argument "," argument ")"
roundup-params = "(" argument "," argument ")"
row-params = "(" [ref-argument-expression ] ")"
rows-params = "(" argument-expression ")"
rsq-params = "(" argument "," argument ")"
rtd-params = "(" argument "," argument "," argument *252("," argument) ")"
search-params = "(" argument "," argument ["," argument] ")"
searchb-params = "(" argument "," argument ["," argument] ")"
second-params = "(" argument-expression ")"
series-params = "(" argument "," argument "," argument "," argument ["," argument] ")"
seriessum-params = "(" argument "," argument "," argument "," argument ")"
sign-params = "(" argument-expression ")"
sin-params = "(" argument-expression ")"
sinh-params = "(" argument-expression ")"
```

```
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sln-params = "(" argument "," argument "," argument ")"
slope-params = "(" argument "," argument ")"
small-params = "(" argument "," argument ")"
sqrt-params = "(" argument-expression ")"
sqrtpi-params = "(" argument-expression ")"
standardize-params = "(" argument "," argument "," argument ")"
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stdev-p-params = "(" (argument-expression / (argument 1*253("," argument))) ")"
stdev-s-params = "(" (argument-expression / (argument 1*253("," argument))) ")"
stdeva-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
stdevp-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
stdevpa-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
steyx-params = "(" argument "," argument ")"
substitute-params = "(" argument "," argument "," argument ["," argument] ")"
subtotal-params = "(" argument "," ref-argument-expression  *253("," ref-argument-expression
) ")"
sum-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
sumif-params = "(" ref-argument-expression  "," argument ["," ref-argument-expression ] ")"
sumifs-params = "(" ref-argument-expression  "," ref-argument-expression  "," argument
*126("," ref-argument-expression  "," argument) ")"
sumproduct-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
sumsq-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
sumx2my2-params = "(" argument "," argument ")"
sumx2py2-params = "(" argument "," argument ")"
sumxmy2-params = "(" argument "," argument ")"
syd-params = "(" argument "," argument "," argument "," argument ")"
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t-dist-2t-params = "(" argument "," argument ")"
t-dist-rt-params = "(" argument "," argument ")"
t-inv-params = "(" argument "," argument ")"
t-inv-2t-params = "(" argument "," argument ")"
t-test-params = "(" argument "," argument "," argument "," argument ")"
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tanh-params = "(" argument-expression ")"
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tbillprice-params = "(" argument "," argument "," argument ")"
tbillyield-params = "(" argument "," argument "," argument ")"
tdist-params = "(" argument "," argument "," argument ")"
text-params = "(" argument "," argument ")"
thaidayofweek-params = "(" argument-expression ")"
thaidigit-params = "(" argument-expression ")"
thaimonthofyear-params = "(" argument-expression ")"
thainumsound-params = "(" argument-expression ")"
thainumstring-params = "(" argument-expression ")"
thaistringlength-params = "(" argument-expression ")"
thaiyear-params = "(" argument-expression ")"
time-params = "(" argument "," argument "," argument ")"
timevalue-params = "(" argument-expression ")"
tinv-params = "(" argument "," argument ")"
today-params = emptyparams
transpose-params = "(" argument-expression ")"
trend-params = "(" (argument-expression / (argument "," argument ["," argument ["," 
argument]])) ")"
trim-params = "(" argument-expression ")"
trimmean-params = "(" argument "," argument ")"
true-params = emptyparams
trunc-params = "(" (argument-expression / (argument "," argument)) ")"
```

```
ttest-params = "(" argument "," argument "," argument "," argument ")"
type-params = "(" argument-expression ")"
upper-params = "(" argument-expression ")"
usdollar-params = "(" (argument-expression / (argument "," argument)) ")"
value-params = "(" argument-expression ")"
var-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
var-p-params = "(" (argument-expression / (argument 1*253("," argument))) ")"
var-s-params = "(" (argument-expression / (argument 1*253("," argument))) ")"
vara-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
varp-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
varpa-params = "(" (argument-expression / (argument 1*254("," argument))) ")"
vdb-params = "(" argument "," argument "," argument "," argument "," argument ["," argument
["," argument]] ")"
vlookup-params = "(" argument "," argument "," argument ["," argument] ")"
weekday-params = "(" (argument-expression / (argument "," argument)) ")"
weeknum-params = "(" (argument-expression / (argument "," argument)) ")"
weibull-params = "(" argument "," argument "," argument "," argument ")"
weibull-dist-params = "(" argument "," argument "," argument "," argument ")"
workday-params = "(" argument "," argument ["," argument] ")"
workday-intl-params = "(" argument "," argument ["," argument ["," argument]] ")"
xirr-params = "(" argument "," argument ["," argument] ")"
xnpv-params = "(" argument "," argument "," argument ")"
year-params = "(" argument-expression ")"
yearfrac-params = "(" argument "," argument ["," argument] ")"
yield-params = "(" argument "," argument "," argument "," argument "," argument "," argument
["," argument] ")"
yielddisc-params = "(" argument "," argument "," argument "," argument ["," argument] ")"
yieldmat-params = "(" argument "," argument "," argument "," argument "," argument ["," 
argument] ")"
z-test-params = "(" argument "," argument ["," argument] ")"
ztest-params = "(" argument "," argument ["," argument] ")"

ref-macro-function-call = "ABSREF" absref-params / "ACTIVE.CELL" active-cell-params / "CALL"
call-params / "CALLER" caller-params / "EVALUATE" evaluate-params / "GET.DOCUMENT" get-
document-params / "INPUT" input-params / "LAST.ERROR" last-error-params / "SCENARIO.GET"
scenario-get-params / "SELECTION" selection-params / "TEXTREF" textref-params / "VIEW.GET"
view-get-params
macro-function-call = ref-macro-function-call / "ADD.BAR" add-bar-params / "ADD.COMMAND" add-
command-params / "ADD.MENU" add-menu-params / "ADD.TOOLBAR" add-toolbar-params / "APP.TITLE"
app-title-params / "ARGUMENT" argument-params / "BREAK" break-params / "CANCEL.KEY" cancel-
key-params / "CHECK.COMMAND" check-command-params / "CREATE.OBJECT" create-object-params /
"CUSTOM.REPEAT" custom-repeat-params / "CUSTOM.UNDO" custom-undo-params / "DELETE.BAR"
delete-bar-params / "DELETE.COMMAND" delete-command-params / "DELETE.MENU" delete-menu-params
/ "DELETE.TOOLBAR" delete-toolbar-params / "DEREF" deref-params / "DIALOG.BOX" dialog-box-
params / "DIRECTORY" directory-params / "DOCUMENTS" documents-params / "ECHO" echo-params /
"ELSE" else-params / "ELSE.IF" else-if-params / "ENABLE.COMMAND" enable-command-params /
"ENABLE.TOOL" enable-tool-params / "END.IF" end-if-params / "ERROR" error-params / "EXEC"
exec-params / "EXECUTE" execute-params / "FCLOSE" fclose-params / "FILES" files-params /
"FOPEN" fopen-params / "FOR" for-params / "FOR.CELL" for-cell-params / "FORMULA.CONVERT"
formula-convert-params / "FPOS" fpos-params / "FREAD" fread-params / "FREADLN" freadln-params
/ "FSIZE" fsize-params / "FWRITE" fwrite-params / "FWRITELN" fwriteln-params / "GET.BAR" get-
bar-params / "GET.CELL" get-cell-params / "GET.CHART.ITEM" get-chart-item-params / "GET.DEF"
get-def-params / "GET.FORMULA" get-formula-params / "GET.LINK.INFO" get-link-info-params /
"GET.MOVIE" get-movie-params / "GET.NAME" get-name-params / "GET.NOTE" get-note-params /
"GET.OBJECT" get-object-params / "GET.TOOL" get-tool-params / "GET.TOOLBAR" get-toolbar-
params / "GET.WINDOW" get-window-params / "GET.WORKBOOK" get-workbook-params /
"GET.WORKSPACE" get-workspace-params / "GOTO" goto-params / "GROUP" group-params / "HALT"
halt-params / "HELP" help-params / "INITIATE" initiate-params / "LINKS" links-params /
"MOVIE.COMMAND" movie-command-params / "NAMES" names-params / "NEXT" next-params / "NOTE"
note-params / "OPEN.DIALOG" open-dialog-params / "OPTIONS.LISTS.GET" options-lists-get-params
/ "PAUSE" pause-params / "POKE" poke-params / "PRESS.TOOL" press-tool-params / "REFTEXT"
reftext-params / "REGISTER" register-params / "REGISTER.ID" register-id-params / "RELREF"
```

```
relref-params / "RENAME.COMMAND" rename-command-params / "REQUEST" request-params /
"RESET.TOOLBAR" reset-toolbar-params / "RESTART" restart-params / "RESULT" result-params /
"RESUME" resume-params / "RETURN" return-params / "SAVE.DIALOG" save-dialog-params /
"SAVE.TOOLBAR" save-toolbar-params  / "SET.NAME" set-name-params / "SET.VALUE" set-value-
params / "SHOW.BAR" show-bar-params / "SPELLING.CHECK" spelling-check-params / "STEP" step-
params / "TERMINATE" terminate-params / "TEXT.BOX" text-box-params / "UNREGISTER" unregister-
params / "VOLATILE" volatile-params / "WHILE" while-params / "WINDOW.TITLE" window-title-
params / "WINDOWS" windows-params

absref-params = "(" argument "," ref-argument-expression ")"
active-cell-params = "(" *space ")"
add-bar-params = "(" argument ")"
add-command-params = "(" argument "," argument "," argument ["," argument ["," argument]] ")"
add-menu-params = "(" argument "," argument ["," argument ["," argument]] ")"
add-toolbar-params = "(" argument ["," argument] ")"
app-title-params = "(" argument ")"
argument-params = "(" argument ["," argument ["," ref-argument-expression]] ")"
break-params = "(" *space ")"
call-params = "(" (argument-expression / (argument "," argument *253("," argument))) ")"
caller-params = "(" *space ")"
cancel-key-params = "(" argument ["," ref-argument-expression] ")"
check-command-params = "(" argument "," argument "," argument "," argument ["," argument] ")"
create-object-params = "(" argument "," argument ["," argument ["," argument ["," argument
["," argument ["," argument ["," argument ["," argument ["," argument ["," argument]]]]]]]]
")"
custom-repeat-params = "(" argument ["," argument ["," argument]] ")"
custom-undo-params = "(" argument ["," argument] ")"
delete-bar-params = "(" argument-expression ")"
delete-command-params = "(" argument "," argument "," argument ["," argument] ")"
delete-menu-params = "(" argument "," argument ["," argument] ")"
delete-toolbar-params = "(" argument-expression ")"
deref-params = "(" ref-argument-expression ")"
dialog-box-params = "(" argument-expression ")"
directory-params = "(" argument ")"
documents-params = "(" argument ["," argument] ")"
echo-params = "(" argument ")"
else-params = "(" *space ")"
else-if-params = "(" argument-expression ")"
enable-command-params = "(" argument "," argument "," argument "," argument ["," argument]
")"
enable-tool-params = "(" argument "," argument "," argument ")"
end-if-params = "(" *space ")"
error-params = "(" argument ["," argument] ")"
evaluate-params = "(" argument-expression ")"
exec-params = "(" (argument-expression / (argument "," argument ["," argument ["," 
argument]])) ")"
execute-params = "(" argument "," argument ")"
fclose-params = "(" argument-expression ")"
files-params = "(" argument ["," argument] ")"
fopen-params = "(" (argument-expression / (argument "," argument)) ")"
for-params = "(" argument "," argument "," argument ["," argument] ")"
for-cell-params = "(" (argument-expression / (argument "," argument ["," argument])) ")"
formula-convert-params = "(" argument "," argument ["," argument ["," argument ["," 
argument]]] ")"
fpos-params = "(" (argument-expression / (argument "," argument)) ")"
fread-params = "(" argument "," argument ")"
freadln-params = "(" argument-expression ")"
fsize-params = "(" argument-expression ")"
fwrite-params = "(" argument "," argument ")"
fwriteln-params = "(" argument "," argument ")"
get-bar-params = "(" argument ["," argument ["," argument ["," argument]]] ")"
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```
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get-chart-item-params = "(" (argument-expression / (argument "," argument ["," argument]))
")"
get-def-params = "(" (argument-expression / (argument "," argument ["," argument])) ")"
get-document-params = "(" (argument-expression / (argument "," argument)) ")"
get-formula-params = "(" argument-expression ")"
get-link-info-params = "(" argument "," argument ["," argument ["," argument]] ")"
get-movie-params = "(" argument "," argument ["," argument] ")"
get-name-params = "(" (argument-expression / (argument "," argument)) ")"
get-note-params = "(" argument ["," argument ["," argument]] ")"
get-object-params = "(" (argument-expression / (argument "," argument ["," argument [","
argument ["," argument]]])) ")"
get-tool-params = "(" (argument-expression / (argument "," argument ["," argument])) ")"
get-toolbar-params = "(" (argument-expression / (argument "," argument)) ")"
get-window-params = "(" (argument-expression / (argument "," argument)) ")"
get-workbook-params = "(" (argument-expression / (argument "," argument)) ")"
get-workspace-params = "(" argument-expression ")"
goto-params = "(" ref-argument-expression ")"
group-params = "(" *space ")"
halt-params = "(" argument ")"
help-params = "(" argument ")"
initiate-params = "(" argument "," argument ")"
input-params = "(" (argument-expression / (argument "," argument ["," argument ["," argument
["," argument ["," argument ["," argument]]]])) ")"
last-error-params = "(" *space ")"
links-params = "(" argument ["," argument] ")"
movie-command-params = "(" argument "," argument "," argument ["," argument] ")"
names-params = "(" argument ["," argument ["," argument]] ")"
next-params = "(" *space ")"
note-params = "(" argument ["," argument ["," argument ["," argument]]] ")"
open-dialog-params = "(" argument ["," argument ["," argument ["," argument]]] ")"
options-lists-get-params = "(" argument-expression ")"
pause-params = "(" argument ")"
poke-params = "(" argument "," argument "," argument ")"
press-tool-params = "(" argument "," argument "," argument ")"
reftext-params = "(" ref-argument-expression "," argument ")"
register-params = "(" (argument-expression / (argument "," argument ["," argument ["," 
argument ["," argument ["," argument ["," argument ["," argument ["," argument ["," argument
*245("," argument)]]]]]]]]) ")"
register-id-params = "(" argument "," argument ["," argument] ")"
relref-params = "(" ref-argument-expression "," ref-argument-expression ")"
rename-command-params = "(" argument "," argument "," argument "," argument ["," argument]
")"
request-params = "(" argument "," argument ")"
reset-toolbar-params = "(" argument-expression ")"
restart-params = "(" argument ")"
result-params = "(" argument ")"
resume-params = "(" argument ")"
return-params = "(" argument ")"
save-dialog-params = "(" argument ["," argument ["," argument ["," argument ["," argument]]]]
")"
save-toolbar-params = "(" argument ["," argument] ")"
scenario-get-params = "(" (argument-expression / (argument "," argument)) ")"
selection-params = "(" *space ")"
set-name-params = "(" (argument-expression / (argument "," argument)) ")"
set-value-params = "(" ref-argument-expression "," argument ")"
show-bar-params = "(" argument ")"
spelling-check-params = "(" (argument-expression / (argument "," argument ["," argument]))
")"
step-params = "(" *space ")"
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```
terminate-params = "(" argument-expression ")"
text-box-params = "(" (argument-expression / (argument "," argument ["," argument ["," argument]])) ")"
textref-params = "(" (argument-expression / (argument "," argument)) ")"
unregister-params = "(" argument-expression ")"
view-get-params = "(" (argument-expression / (argument "," argument)) ")"
volatile-params = "(" argument ")"
while-params = "(" argument-expression ")"
window-title-params = "(" argument ")"
windows-params = "(" argument ["," argument] ")"
command-function-call = "A1.R1C1" a1-r1c1-params / "ACTIVATE" ["?"] activate-params /
"ACTIVATE.NEXT" activate-next-params / "ACTIVATE.NOTES" activate-notes-params /
"ACTIVATE.PREV" activate-prev-params / "ACTIVE.CELL.FONT" ["?"] active-cell-font-params /
"ADD.ARROW" add-arrow-params / "ADD.CHART.AUTOFORMAT" ["?"] add-chart-autoformat-params /
"ADD.LIST.ITEM" add-list-item-params / "ADD.OVERLAY" add-overlay-params / "ADD.PRINT.AREA"
add-print-area-params / "ADD.TOOL" add-tool-params / "ADDIN.MANAGER" ["?"] addin-manager-
params / "ALERT" alert-params / "ALIGNMENT" ["?"] alignment-params / "APP.ACTIVATE" app-
activate-params / "APP.ACTIVATE.MICROSOFT" app-activate-microsoft-params / "APP.MAXIMIZE"
app-maximize-params / "APP.MINIMIZE" app-minimize-params / "APP.MOVE" ["?"] app-move-params /
"APP.RESTORE" app-restore-params / "APP.SIZE" ["?"] app-size-params / "APPLY.NAMES" ["?"]
apply-names-params / "APPLY.STYLE" ["?"] apply-style-params / "ARRANGE.ALL" ["?"] arrange-
all-params / "ASSIGN.TO.OBJECT" ["?"] assign-to-object-params / "ASSIGN.TO.TOOL" ["?"]
assign-to-tool-params / "ATTACH.TEXT" ["?"] attach-text-params / "ATTACH.TOOLBARS" ["?"]
attach-toolbars-params / "ATTRIBUTES" ["?"] attributes-params / "AUTO.OUTLINE" auto-outline-
params / "AUTOCORRECT" ["?"] autocorrect-params / "AXES" ["?"] axes-params / "BEEP" beep-
params / "BORDER" ["?"] border-params / "BRING.TO.FRONT" bring-to-front-params /
"CALCULATE.DOCUMENT" calculate-document-params / "CALCULATE.NOW" calculate-now-params /
"CALCULATION" ["?"] calculation-params / "CANCEL.COPY" cancel-copy-params / "CELL.PROTECTION"
["?"] cell-protection-params / "CHANGE.LINK" ["?"] change-link-params / "CHART.ADD.DATA"
["?"] chart-add-data-params / "CHART.TREND" ["?"] chart-trend-params / "CHART.WIZARD" ["?"]
chart-wizard-params / "CHECKBOX.PROPERTIES" ["?"] checkbox-properties-params / "CLEAR" ["?"]
clear-params / "CLEAR.OUTLINE" clear-outline-params / "CLEAR.PRINT.AREA" clear-print-area-
params / "CLEAR.ROUTING.SLIP" clear-routing-slip-params / "CLOSE" close-params / "CLOSE.ALL"
close-all-params / "COLOR.PALETTE" ["?"] color-palette-params / "COLUMN.WIDTH" ["?"] column-
width-params / "COMBINATION" ["?"] combination-params / "CONSOLIDATE" ["?"] consolidate-
params / "CONSTRAIN.NUMERIC" constrain-numeric-params / "COPY" copy-params / "COPY.CHART"
["?"] copy-chart-params / "COPY.PICTURE" ["?"] copy-picture-params / "COPY.TOOL" copy-tool-
params / "CREATE.NAMES" ["?"] create-names-params / "CREATE.PUBLISHER" ["?"] create-
publisher-params / "CUSTOMIZE.TOOLBAR" ["?"] customize-toolbar-params / "CUT" cut-params /
"DATA.DELETE" ["?"] data-delete-params / "DATA.FIND" data-find-params / "DATA.FIND.NEXT"
data-find-next-params / "DATA.FIND.PREV" data-find-prev-params / "DATA.FORM" data-form-params
/ "DATA.LABEL" ["?"] data-label-params / "DATA.SERIES" ["?"] data-series-params /
"DEFINE.NAME" ["?"] define-name-params / "DEFINE.STYLE" ["?"] define-style-params /
"DELETE.ARROW" delete-arrow-params / "DELETE.CHART.AUTOFORMAT" delete-chart-autoformat-params
/ "DELETE.FORMAT" ["?"] delete-format-params / "DELETE.NAME" ["?"] delete-name-params /
"DELETE.NOTE" delete-note-params / "DELETE.OVERLAY" delete-overlay-params / "DELETE.STYLE"
delete-style-params / "DELETE.TOOL" delete-tool-params / "DEMOTE" ["?"] demote-params /
"DISABLE.INPUT" disable-input-params / "DISPLAY" ["?"] display-params / "DUPLICATE"
duplicate-params / "EDIT.COLOR" ["?"] edit-color-params / "EDIT.DELETE" ["?"] edit-delete-
params / "EDIT.OBJECT" edit-object-params / "EDIT.REPEAT" edit-repeat-params / "EDIT.SERIES"
["?"] edit-series-params / "EDIT.TOOL" edit-tool-params / "EDITBOX.PROPERTIES" ["?"] editbox-
properties-params / "EDITION.OPTIONS" ["?"] edition-options-params / "ENABLE.OBJECT" enable-
object-params / "ENABLE.TIPWIZARD" enable-tipwizard-params / "ENTER.DATA" enter-data-params /
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on-time-params = "(" argument *3("," argument) ")"
on-window-params = "(" argument ["," argument] ")"
open-params = "(" argument *16("," argument) ")"
open-links-params = "(" argument *14("," argument) ")"
open-mail-params = "(" argument ["," argument] ")"
open-text-params = "(" argument *16("," argument) ")"
options-calculation-params = "(" argument *9("," argument) ")"
options-chart-params = "(" argument *2("," argument) ")"
options-edit-params = "(" argument *10("," argument) ")"
options-general-params = "(" argument *13("," argument) ")"
options-lists-add-params = "(" argument ["," argument] ")"
options-lists-delete-params = "(" argument ")"
options-me-params = "(" argument *8("," argument) ")"
options-menono-params = "(" argument *4("," argument) ")"
options-save-params = "(" argument *3("," argument) ")"
options-spell-params = "(" argument *11("," argument) ")"
options-transition-params = "(" argument *4("," argument) ")"
options-view-params = "(" argument *17("," argument) ")"
outline-params = "(" argument *3("," argument) ")"
overlay-params = "(" argument *11("," argument) ")"
overlay-chart-type-params = "(" argument ")"
page-setup-params = "(" argument *29("," argument) ")"
parse-params = "(" argument ["," argument] ")"
paste-params = "(" argument ")"
paste-link-params = "(" *space ")"
paste-picture-params = "(" *space ")"
paste-picture-link-params = "(" *space ")"
paste-special-params = "(" argument *6("," argument) ")"
paste-tool-params = "(" argument ["," argument] ")"
patterns-params = "(" argument *12("," argument) ")"
picklist-params = "(" *space ")"
pivot-add-fields-params = "(" argument *4("," argument) ")"
pivot-field-params = "(" argument *3("," argument) ")"
pivot-field-group-params = "(" argument *3("," argument) ")"
```

```
pivot-field-properties-params = "(" argument *6("," argument) ")"
pivot-field-ungroup-params = "(" *space ")"
pivot-item-params = "(" argument *3("," argument) ")"
pivot-item-properties-params = "(" argument *6("," argument) ")"
pivot-refresh-params = "(" argument ")"
pivot-show-pages-params = "(" argument ["," argument] ")"
pivot-table-chart-params = "(" argument *15("," argument) ")"
pivot-table-wizard-params = "(" argument *15("," argument) ")"
post-document-params = "(" argument ")"
precision-params = "(" argument ")"
preferred-params = "(" *space ")"
print-params = "(" argument *16("," argument) ")"
print-preview-params = "(" argument ")"
printer-setup-params = "(" argument ")"
promote-params = "(" argument ")"
protect-document-params = "(" argument *6("," argument) ")"
protect-revisions-params = "(" *space ")"
pushbutton-properties-params = "(" argument *5("," argument) ")"
quit-params = "(" *space ")"
remove-list-item-params = "(" argument ["," argument] ")"
remove-page-break-params = "(" argument ["," argument] ")"
rename-object-params = "(" argument ")"
replace-font-params = "(" argument *9("," argument) ")"
reset-tool-params = "(" argument ["," argument] ")"
rm-print-area-params = "(" argument ")"
route-document-params = "(" *space ")"
routing-slip-params = "(" argument *5("," argument) ")"
row-height-params = "(" argument *3("," argument) ")"
run-params = "(" argument ["," argument] ")"
save-params = "(" *space ")"
save-as-params = "(" argument *6("," argument) ")"
save-copy-as-params = "(" argument ")"
save-new-object-params = "(" argument ")"
save-workbook-params = "(" argument *5("," argument) ")"
save-workspace-params = "(" argument ")"
scale-params = "(" argument *9("," argument) ")"
scenario-add-params = "(" argument *5("," argument) ")"
scenario-cells-params = "(" argument ")"
scenario-delete-params = "(" argument ")"
scenario-edit-params = "(" argument *6("," argument) ")"
scenario-merge-params = "(" argument ")"
scenario-show-params = "(" argument ")"
scenario-show-next-params = "(" *space ")"
scenario-summary-params = "(" argument ["," argument] ")"
scrollbar-properties-params = "(" argument *6("," argument) ")"
select-params = "(" argument ["," argument] ")"
select-all-params = "(" *space ")"
select-chart-params = "(" *space ")"
select-end-params = "(" argument ")"
select-last-cell-params = "(" *space ")"
select-list-item-params = "(" argument ["," argument] ")"
select-plot-area-params = "(" *space ")"
select-special-params = "(" argument *2("," argument) ")"
send-keys-params = "(" argument ["," argument] ")"
send-mail-params = "(" argument *2("," argument) ")"
send-to-back-params = "(" *space ")"
series-axes-params = "(" argument ")"
series-order-params = "(" argument *2("," argument) ")"
series-x-params = "(" argument ")"
```

```
series-y-params = "(" argument ["," argument] ")"
set-control-value-params = "(" argument ")"
set-criteria-params = "(" *space ")"
set-database-params = "(" *space ")"
set-dialog-default-params = "(" argument ")"
set-dialog-focus-params = "(" argument ")"
set-extract-params = "(" *space ")"
set-list-item-params = "(" argument ["," argument] ")"
set-page-break-params = "(" *space ")"
set-preferred-params = "(" argument ")"
set-print-area-params = "(" argument ")"
set-print-titles-params = "(" argument ["," argument] ")"
set-update-status-params = "(" argument *2("," argument) ")"
share-params = "(" *space ")"
share-name-params = "(" argument ")"
sheet-background-params = "(" argument ["," argument] ")"
short-menus-params = "(" argument ")"
show-active-cell-params = "(" *space ")"
show-clipboard-params = "(" *space ")"
show-detail-params = "(" argument *3("," argument) ")"
show-dialog-params = "(" argument ")"
show-info-params = "(" argument ")"
show-levels-params = "(" argument ["," argument] ")"
show-toolbar-params = "(" argument *9("," argument) ")"
sort-params = "(" argument *16("," argument) ")"
sort-special-params = "(" argument *13("," argument) ")"
sound-note-params = "(" argument *2("," argument) ")"
sound-play-params = "(" argument *2("," argument) ")"
spelling-params = "(" argument *5("," argument) ")"
split-params = "(" argument ["," argument] ")"
standard-font-params = "(" argument *8("," argument) ")"
standard-width-params = "(" argument ")"
style-params = "(" argument ["," argument] ")"
subscribe-to-params = "(" argument ["," argument] ")"
subtotal-create-params = "(" argument *5("," argument) ")"
subtotal-remove-params = "(" *space ")"
summary-info-params = "(" argument *4("," argument) ")"
tab-order-params = "(" *space ")"
table-params = "(" argument ["," argument] ")"
text-to-columns-params = "(" argument *13("," argument) ")"
tracer-clear-params = "(" *space ")"
tracer-display-params = "(" argument ["," argument] ")"
tracer-error-params = "(" *space ")"
tracer-navigate-params = "(" argument *2("," argument) ")"
traverse-notes-params = "(" argument ["," argument] ")"
undo-params = "(" *space ")"
ungroup-params = "(" *space ")"
ungroup-sheets-params = "(" *space ")"
unhide-params = "(" argument ")"
unlocked-next-params = "(" *space ")"
unlocked-prev-params = "(" *space ")"
unprotect-revisions-params = "(" *space ")"
update-link-params = "(" argument ["," argument] ")"
vba-insert-file-params = "(" argument ")"
vba-make-addin-params = "(" argument ")"
vba-procedure-definition-params = "(" *space ")"
vbaactivate-params = "(" argument ["," argument] ")"
view-3d-params = "(" argument *5("," argument) ")"
view-define-params = "(" argument *2("," argument) ")"
```

```
view-delete-params = "(" argument ")"
view-show-params = "(" argument ")"
vline-params = "(" argument ")"
vpage-params = "(" argument ")"
vscroll-params = "(" argument ["," argument] ")"
wait-params = "(" argument ")"
web-publish-params = "(" argument *8("," argument) ")"
window-maximize-params = "(" argument ")"
window-minimize-params = "(" argument ")"
window-move-params = "(" argument *2("," argument) ")"
window-restore-params = "(" argument ")"
window-size-params = "(" argument *2("," argument) ")"
workbook-activate-params = "(" argument ["," argument] ")"
workbook-add-params = "(" argument *2("," argument) ")"
workbook-copy-params = "(" argument *2("," argument) ")"
workbook-delete-params = "(" argument ")"
workbook-hide-params = "(" argument ["," argument] ")"
workbook-insert-params = "(" argument ")"
workbook-move-params = "(" argument *2("," argument) ")"
workbook-name-params = "(" argument ["," argument] ")"
workbook-new-params = "(" argument *2("," argument) ")"
workbook-next-params = "(" *space ")"
workbook-options-params = "(" argument *2("," argument) ")"
workbook-prev-params = "(" *space ")"
workbook-protect-params = "(" argument *2("," argument) ")"
workbook-scroll-params = "(" argument ["," argument] ")"
workbook-select-params = "(" argument *2("," argument) ")"
workbook-tab-split-params = "(" argument ")"
workbook-unhide-params = "(" argument ")"
workgroup-params = "(" argument ")"
workgroup-options-params = "(" *space ")"
workspace-params = "(" argument *15("," argument) ")"
zoom-params = "(" argument ")"
```

2.2.2.1 Cell Formulas

A cell formula is a **formula** that adheres to the grammar specified in section 2.2.2, with the following restrictions:

- The formula MUST NOT use the bang-reference or bang-name production rules.

All **f** elements of **CT_Cell** elements, as specified in [ISO/IEC-29500-4] section A.2, and all **calculatedColumnFormula** and **totalsRowFormula** elements of **CT_TableColumn** elements, as specified in [ISO/IEC-29500-4] section A.2, are cell formulas.

2.2.2.2 Conditional Formatting Formulas

A **conditional formatting** formula is a formula that adheres to the grammar specified in section 2.2.2, with the following restrictions:

- The formula MUST NOT use the union-operator, intersection-operator, range-operator, bang-reference, bang-name, array-constant, external-cell-reference, or structure-reference production rules.<3>

All **val** attributes of **CT_Cfvo** elements, as specified in [ISO/IEC-29500-4] section A.2, and all **formula** elements of **CT_CfRule** elements, as specified in [ISO/IEC-29500-4] section A.2, are conditional formatting formulas.

2.2.2.3 Data Validation Formulas

A data validation formula is a formula that adheres to the grammar specified in section 2.2.2, with the following restrictions:

- The formula MUST NOT use the union-operator, intersection-operator, range-operator, bang-reference, bang-name, array-constant, sheet-range-reference, or structure-reference production rules.<4>

All **formula1** and **formula2** elements of **CT_DataValidation** elements, as specified in [ISO/IEC-29500-4] section A.2, are data validation formulas.

2.2.2.4 External Name Formulas

An external name formula is a formula that adheres to the following grammar:

```
external-name-formula = ref-constant / sheet-range-reference / single-sheet-reference
```

When matching the single-sheet or sheet-range rules for an external name formula, the optional workbook-index in those rules MUST NOT be omitted.

All **refersTo** attributes of **CT_ExternalDefinedName** elements, as specified in [ISO/IEC-29500-4] section A.2, are external name formulas.

2.2.2.5 Name Formulas

A name formula is a formula that adheres to the grammar specified in section 2.2.2, with the following differences.

For name formulas, the function-call rule is expanded as follows:

```
function-call =/ (macro-function-call / command-function-call)
```

The formula MUST NOT use the local-cell-reference production rule.

All **formula** and **oldFormula** elements of **CT_RevisionDefinedName** elements, as specified in [ISO/IEC-29500-4] section A.2, and all **definedName** elements of **CT_DefinedNames** elements, as specified in [ISO/IEC-29500-4] section A.2, are name formulas.

2.2.2.6 Pivot Field Formulas

A pivot field formula is a formula that adheres to the grammar specified in section 2.2.2, with the following differences.

For pivot field formulas, the nospace-expression rule is expanded as follows:

```
nospace-expression =/ pivot-field-name
pivot-field-name = name / apostrophe 1*pivot-field-string-character apostrophe
pivot-field-string-character = apostrophe apostrophe / pivot-field-character
pivot-field-character = character ; MUST NOT be apostrophe
```

The formula MUST NOT use the ref-infix-operator, array-constant, getpivotdata-params, dcount-params, dcounta-params, dsum-params, daverage-params, dmin-params, dmax-params, dproduct-

params, dstdev-params, dstdevp-params, dvar-params, dvarp-params, index-params, rand-params, now-params, areas-params, rows-params, columns-params, offset-params, cell-params, index-params, today-params, info-params, or randbetween-params production rules.

A name used in a pivot field formula MUST NOT have any of the following forms:

- All
- Blank

All **formula** attributes of **CT_CacheField** elements, as specified in [ISO/IEC-29500-4] section A.2, are pivot field formulas.

2.2.2.7 Pivot Item Formulas

A pivot item formula is a formula that adheres to the grammar specified in section 2.2.2, with the following differences.

For pivot item formulas, the nospace-expression rule is expanded as follows:

```
nospace-expression =/ pivot-items
pivot-items = pivot-item space *(*whitespace pivot-item)
pivot-item = pivot-field-name / pivot-field-name "[" pivot-item-value "]"
pivot-item-value = pivot-field-name / [sign] whole-number-part
```

The formula MUST NOT use the ref-infix-operator, array-constant, getpivotdata-params, dcount-params, dcounta-params, dsum-params, daverage-params, dmin-params, dmax-params, dproduct-params, dstdev-params, dstdevp-params, dvar-params, dvarp-params, index-params, rand-params, now-params, areas-params, rows-params, columns-params, offset-params, cell-params, index-params, today-params, info-params, or randbetween-params production rules.

A name used in a pivot item formula MUST NOT have any of the following forms:

- All
- Blank

All **formula** attributes of **CT_CalculatedItem** elements, as specified in [ISO/IEC-29500-4] section A.2, are pivot item formulas.

2.2.3 Functions

The predefined functions ([ISO/IEC-29500-1] section 18.17.7) are extended by the following **future functions**.

Future function
_xlfn.AGGREGATE
_xlfn.BETA.DIST
_xlfn.BETA.INV
_xlfn.BINOM.DIST
_xlfn.BINOM.INV

Future function
_xlfn.CEILING.PRECISE
_xlfn.CHISQ.DIST
_xlfn.CHISQ.DIST.RT
_xlfn.CHISQ.INV
_xlfn.CHISQ.INV.RT
_xlfn.CHISQ.TEST
_xlfn.CONFIDENCE.NORM
_xlfn.CONFIDENCE.T
_xlfn.COVARIANCE.P
_xlfn.COVARIANCE.S
ECMA.CEILING
_xlfn.ERF.PRECISE
_xlfn.ERFC.PRECISE
_xlfn.EXPON.DIST
_xlfn.F.DIST
_xlfn.F.DIST.RT
_xlfn.F.INV
_xlfn.F.INV.RT
_xlfn.F.TEST
_xlfn.FLOOR.PRECISE
_xlfn.GAMMA.DIST
_xlfn.GAMMA.INV
_xlfn.GAMMALN.PRECISE
_xlfn.HYPGEOM.DIST
ISO.CEILING
_xlfn.LOGNORM.DIST
_xlfn.LOGNORM.INV
_xlfn.MODE.MULT
_xlfn.MODE.SNGL
_xlfn.NEGBINOM.DIST

Future function
NETWORKDAYS.INTL
_xlfn.NORM.DIST
_xlfn.NORM.INV
_xlfn.NORM.S.DIST
_xlfn.NORM.S.INV
_xlfn.PERCENTILE.EXC
_xlfn.PERCENTILE.INC
_xlfn.PERCENTRANK.EXC
_xlfn.PERCENTRANK.INC
_xlfn.POISSON.DIST
_xlfn.QUARTILE.EXC
_xlfn.QUARTILE.INC
_xlfn.RANK.AVG
_xlfn.RANK.EQ
_xlfn.STDEV.P
_xlfn.STDEV.S
_xlfn.T.DIST
_xlfn.T.DIST.2T
_xlfn.T.DIST.RT
_xlfn.T.INV
_xlfn.T.INV.2T
_xlfn.T.TEST
_xlfn.VAR.P
_xlfn.VAR.S
_xlfn.WEIBULL.DIST
WORKDAY.INTL
_xlfn.Z.TEST

The function syntax ([ISO/IEC-29500-1] section 18.17.2.4) is extended by changing the function-name rule to:

```
function-name =
   prefixed-function-name |
```

```
predefined-function-name |
user-defined-function-name |
future-function-list;
```

The future-function-list rule is found in the Formulas grammar.

2.2.4 Extensions by Part

This section specifies the elements from Office Open XML file formats as specified in [ISO/IEC-29500-1] that are extended by this format. Either the **Ignorable** attribute ([ISO/IEC-29500-3] section 10.1.1), **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1), or the **extLst** element ([ISO/IEC-29500-1] section 18.2.10) MUST be used to maintain compatibility with Office Open XML file formats implementations as specified in [ISO/IEC-29500:2008].

2.2.4.1 Connections

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **connection** element ([ISO/IEC-29500-1] section 18.13.1) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{D79990A0-CA42-45E3-83F4-45C500A0EAA5}	connection

See [ISO/IEC-29500-3] section 10.1.2 for more details about how extension lists are used.

2.2.4.2 Drawing

The **oneCellAnchor** element ([ISO/IEC-29500-1] section 20.5.2.24) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/drawingml/2010/slicer	slicer
Fallback	**sp** ([ISO/IEC-29500-1] section 20.5.2.29)

The **twoCellAnchor** element ([ISO/IEC-29500-1] section 20.5.2.33) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/drawingml/2010/slicer	slicer
Fallback	**sp** ([ISO/IEC-29500-1] section

AlternateContent components	Child element
	20.5.2.29)

The **grpSp** element ([ISO/IEC-29500-1] section 20.5.2.17) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/drawingml/2010/slicer	slicer
Fallback	**sp** ([ISO/IEC-29500-1] section 20.5.2.29)

The **absoluteAnchor** element ([ISO/IEC-29500-1] section 20.5.2.1) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/drawingml/2010/slicer	slicer
Fallback	**sp** ([ISO/IEC-29500-1] section 20.5.2.29)

2.2.4.3 External Workbook References

The **oleItems** element ([ISO/IEC-29500-1] section 18.14.10) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	oleItem
Fallback	**oleItem** ([ISO/IEC-29500-1] section 18.14.9)

2.2.4.4 Pivot Table

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **pivotTableDefinition** element ([ISO/IEC-29500-1] section 18.10.1.73) is extended by the addition of new child **ext** elements ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{962EF5D1-5CA2-4C93-8EF4-DBF5C05439D2}	pivotTableDefinition

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **pivotField** element ([ISO/IEC-29500-1] section 18.10.1.69) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{2946ED86-A175-432A-8AC1-64E0C546D7DE}	pivotField

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **dataField** element ([ISO/IEC-29500-1] section 18.10.1.22) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{E15A36E0-9728-4E99-A89B-3F7291B0FE68}	dataField

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **pivotHierarchy** element ([ISO/IEC-29500-1] section 18.10.1.72) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{F1805F06-0CD304483-9156-8803C3D141DF}	pivotHierarchy

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	iconFilter
Fallback	**customFilters** ([ISO/IEC-29500-1] section 18.3.2.3)

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	customFilters
Fallback	Either **customFilters** ([ISO/IEC-29500-1] section 18.3.2.3) or none

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	**filters** ([ISO/IEC-29500-1] section 18.3.2.8) such that instead of child **filter** ([ISO/IEC-29500-1] section 18.3.2.6) elements, there are filter elements
Fallback	**customFilters** ([ISO/IEC-29500-1] section 18.3.2.3)

The **filters** element ([ISO/IEC-29500-1] section 18.3.2.8) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	filter
Fallback	Either **filter** ([ISO/IEC-29500-1] section 18.3.2.6) or none

The **sortState** element ([ISO/IEC-29500-1] section 18.3.1.92) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	sortCondition
Fallback	**sortCondition** ([ISO/IEC-29500-1] section

AlternateContent components	Child element
	18.3.1.91)

2.2.4.5 Pivot Table Cache Definition

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **pivotCacheDefinition** element ([ISO/IEC-29500-1] section 18.10.1.67) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{725AE2AE-9491-48BE-B2B4-4EB974FC3084}	pivotCacheDefinition

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **cacheField** element ([ISO/IEC-29500-1] section 18.10.1.3) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{63CAB8AC-B538-458D-9797-405883B0398D}	cacheField

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **cacheHierarchy** element ([ISO/IEC-29500-1] section 18.10.1.6) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{8CF416AD-EC4C-4ABA-99F5-12A058AE0983}	cacheHierarchy

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **calculatedMember** element ([ISO/IEC-29500-1] section 18.10.1.10) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{0C70D0D5-359C-4A49-802D-23BBF952B5CE}	calculatedMember

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **cacheSource** element ([ISO/IEC-29500-1] section 18.10.1.7) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{F057638F-6D5F-4E77-A914-E7F072B9BCA8}	sourceConnection

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

2.2.4.6 Query Table

The **sortState** element ([ISO/IEC-29500-1] section 18.3.1.92) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	sortCondition
Fallback	**sortCondition** ([ISO/IEC-29500-1] section 18.3.1.91)

2.2.4.7 Styles

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **styleSheet** element ([ISO/IEC-29500-1] section 18.8.39) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{EB79DEF2-80B8-43E5-95BD-54CBDDF9020C}	slicerStyles
{46F421CA-312F-682F-3DD2-61675219B42D}	dxfs

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **font** element ([ISO/IEC-29500-1] section 18.8.22) is extended by the addition of a knownFonts attribute. To maintain compatibility with implementations of Office Open XML file formats as specified in [ISO/IEC-29500:2008], the namespace prefix of the attribute MUST be specified as an **Ignorable** attribute ([ISO/IEC-29500-3] section 10.1.1).

2.2.4.8 Table Definition

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **table** element ([ISO/IEC-29500-1] section 18.5.1.2) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{504A1906-F514-4F6F-8877-14C23A59335A}	table

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	iconFilter
Fallback	**customFilters** ([ISO/IEC-29500-1] section 18.3.2.3)

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	customFilters
Fallback	Either **customFilters** ([ISO/IEC-29500-1] section 18.3.2.3) or none

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	**filters** ([ISO/IEC-29500-1] section 18.3.2.8) such that instead of any child **filter** ([ISO/IEC-29500-1] section 18.3.2.6) elements, there are filter elements
Fallback	**customFilters** ([ISO/IEC-29500-1] section 18.3.2.3)

The **filters** element ([ISO/IEC-29500-1] section 18.3.2.8) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	filter
Fallback	Either **filter** ([ISO/IEC-29500-1] section 18.3.2.6) or none

The **sortState** element ([ISO/IEC-29500-1] section 18.3.1.92) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	sortCondition
Fallback	**sortCondition** ([ISO/IEC-29500-1] section 18.3.1.91)

2.2.4.9 Workbook

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **workbook** element ([ISO/IEC-29500-1] section 18.2.27) is extended by the addition of new child **ext** elements ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{876F7934-8845-4945-9796-88D515C7AA90}	pivotCaches
{BBE1A952-AA13-448E-AADC-164F8A28A991}	slicerCaches
{79F54976-1DA5-4618-B147-ACDE4B953A38}	workbookPr

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

2.2.4.10 Worksheet

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **worksheet** element ([ISO/IEC-29500-1] section 18.3.1.99) is extended by the addition of new child **ext** elements ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{78C0D931-6437-407D-A8EE-F0AAD7539E65}	conditionalFormattings
{CCE6A557-97BC-4B89-ADB6-D9C93CAAB3DF}	dataValidations
{05C60535-1F16-4FD2-B633-F4F36F0B64E0}	sparklineGroups
{A8765BA9-456A-4DAB-B4F3-ACF838C121DE}	slicerList

Ext URI	Child element
{FC87AEE6-9EDD-4A0A-B7FB-166176984837}	protectedRanges
{01252117-D84E-4E92-8308-4BE1C098FCBB}	ignoredErrors

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **extLst** child element ([ISO/IEC-29500-1] section 18.2.10) of the **cfRule** element ([ISO/IEC-29500-1] section 18.3.1.10) is extended by the addition of a new child **ext** element ([ISO/IEC-29500-1] section 18.2.7) whose structure is specified in the following table.

Ext URI	Child element
{B025F937-C7B1-47D3-B67F-A62EFF666E3E}	id

See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

The **sheetFormatPr** element ([ISO/IEC-29500-1] section 18.3.1.81) is extended by the addition of a dyDescent attribute. To maintain compatibility with Office Open XML file formats implementations as specified in [ISO/IEC-29500:2008], the namespace prefix of the attribute MUST be specified as an **Ignorable** attribute ([ISO/IEC-29500-3] section 10.1.1).

The **row** element ([ISO/IEC-29500-1] section 18.3.1.73) is extended by the addition of a dyDescent attribute. To maintain compatibility with Office Open XML file formats implementations as specified in [ISO/IEC-29500:2008], the namespace prefix of the attribute MUST be specified as an **Ignorable** attribute ([ISO/IEC-29500-3] section 10.1.1).

The **sortState** element ([ISO/IEC-29500-1] section 18.3.1.92) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	sortCondition
Fallback	**sortCondition** ([ISO/IEC-29500-1] section 18.3.1.91)

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	iconFilter
Fallback	**customFilters** ([ISO/IEC-29500-1] section 18.3.2.3)

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	customFilters
Fallback	Either **customFilters** ([ISO/IEC-29500-1] section 18.3.2.3) or none

The **filterColumn** element ([ISO/IEC-29500-1] section 18.3.2.7) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	**filters** ([ISO/IEC-29500-1] section 18.3.2.8) such that instead of child **filter** ([ISO/IEC-29500-1] section 18.3.2.6) elements, there are filter elements
Fallback	**customFilters** ([ISO/IEC-29500-1] section 18.3.2.3)

The **filters** element ([ISO/IEC-29500-1] section 18.3.2.8) is extended by the addition of a child **AlternateContent** element ([ISO/IEC-29500-3] section 10.2.1) whose structure is specified in the following table.

AlternateContent components	Child element
Choice: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main	filter
Fallback	Either **filter** ([ISO/IEC-29500-1] section 18.3.2.6) or none

2.3 Conceptual Overview

This section specifies how higher-level features of the file format are represented by combinations of low-level structures.

2.3.1 PivotTable What-if Analysis

PivotTable what-if analysis enables the editing of summarized values in an **OLAP** PivotTable ([ISO/IEC-29500-1] section 18.10) view, for example, editing summarized values in the PivotTable data area of the PivotTable view.

A **CT_PivotEdits** element, as specified in section 2.6.37, and its child **CT_PivotEdit** elements, as specified in section 2.6.38, specify the values in the OLAP PivotTable view that have been modified and the corresponding values in the OLAP PivotTable source data. The **CT_PivotUserEdit** child element, as specified in section 2.6.41, of the **CT_PivotEdit** element specifies a value or a formula. The location of the modified value in the OLAP PivotTable view is specified by a PivotTable rule specified by the **CT_PivotArea** element ([ISO/IEC-29500-4] section A.2) in this **CT_PivotEdit** element. The **OLAP tuple** that identifies the corresponding value in the OLAP PivotTable **source data** is specified by the **CT_TupleItems** element, as specified in section 2.6.43, in this **CT_PivotEdit** element.

A **CT_PivotChanges** element, as specified in section 2.6.39, and its child **CT_PivotChange** elements, as specified in section 2.6.40, specify the values in the OLAP PivotTable view that have been designated for **OLAP allocation** and the corresponding values in the OLAP PivotTable source data. The order of the **CT_PivotChange** elements determines the order in which they are designated for OLAP allocation. The **CT_PivotChange** element specifies a single edited value designated for OLAP allocation. An OLAP allocation value is specified by the **CT_PivotEditValue** child element, as specified in section 2.6.42, of the **CT_PivotChange** element. The **allocationMethod** attribute of the **CT_PivotChange** element specifies the OLAP allocation method. The OLAP tuple that identifies the location of the edited value in the OLAP PivotTable view and the corresponding value in the OLAP PivotTable source data is specified by the **CT_TupleItems** child element of the **CT_PivotChange** element.

For example, when an OLAP PivotTable is refreshed, the values designated for OLAP allocation, specified by the **CT_PivotChanges** element and its child **CT_PivotChange** elements, are sent to the OLAP **data provider** along with the OLAP allocation method indicating how to allocate the updated values. The OLAP data provider updates the values, and those new values are then refreshed and summarized in the data area of the PivotTable view, instead of summarizing the original values from the OLAP PivotTable source data.

If the **enableEdit** attribute of the **CT_PivotTableDefinition** element, as specified in section 2.6.32, is "false", **CT_PivotEdits** and **CT_PivotChanges** elements MUST NOT exist in this part. PivotTable what-if analysis is enabled if, and only if, the **enableEdit** attribute of the **CT_PivotTableDefinition** element is "true" and the PivotTable source data is OLAP.

2.3.2 Slicers

A slicer is a mechanism for filtering data in PivotTable ([ISO/IEC-29500-1] section 18.10) views and **cube functions**. A slicer is based on a field (1) in the slicer source data, and the slicer filters on distinct values in that column. In the case of using OLAP slicer source data, a slicer is based on an **OLAP hierarchy**.

A slicer has two major parts, a slicer cache and a slicer view. There can be more than one slicer view based on a single slicer cache. When filtering multi-level OLAP hierarchies using slicers, separate slicer views are used for each **OLAP level**.

2.3.2.1 Slicer Cache

A slicer cache specifies the subset of slicer source data that is cached for display in slicer views, as well as properties related to slicer filtering. A slicer cache is specified by the CT_SlicerCacheDefinition element.

A slicer cache has an associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache as specified in section 2.3.2.1.2.

If the slicer source data is an OLAP **data source (1)**, the **sourceName** attribute of the **CT_SlicerCacheDefinition** element specifies the **MDX unique name** of the associated OLAP hierarchy.

If the slicer source data is a non-OLAP data source (1), the **sourceName** attribute of the **CT_SlicerCacheDefinition** element specifies the associated PivotTable cache field of the associated PivotTable **PivotCache**.

If the slicer is used to **filter** PivotTable views, the slicer cache specifies the PivotTable views being filtered as specified in section 2.3.2.1.3.

2.3.2.1.1 Slicer Source Data

The source data for a slicer is specified by the associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache as specified in Slicer Cache Relationship to PivotCache.

2.3.2.1.2 Slicer Cache Relationship to PivotCache

A slicer cache is associated with a PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache. The association is specified by the following rules:

- If the CT_SlicerCacheDefinition element has a child CT_SlicerCacheData element with a child CT_OlapSlicerCache element, then the type of slicer source data is OLAP and the associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache of the slicer cache is specified by the **pivotCacheId** attribute of the CT_OlapSlicerCache element. The associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache MUST be based on an OLAP connection ([ISO/IEC-29500-1] section 18.13.5). The **slicerData** attribute of the CT_PivotCacheDefinition element MUST be "true".
- If the CT_SlicerCacheDefinition element has a child CT_SlicerCacheData element with a child CT_TabularSlicerCache element, the type of slicer source data is non-OLAP and the associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache of the slicer cache is specified by the **pivotCacheId** attribute of the CT_TabularSlicerCache element. The associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache MUST be based on a non-OLAP connection ([ISO/IEC-29500-1] section 18.13). The **slicerData** attribute of the CT_PivotCacheDefinition element MUST be "false".

Multiple slicer caches can be associated with one PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache.

If a slicer cache is associated, as specified by Slicer Cache Relationship to PivotTable View, with one or more PivotTable ([ISO/IEC-29500-1] section 18.10) views, and the slicer source data type is non-OLAP, the slicer cache and each associated PivotTable ([ISO/IEC-29500-1] section 18.10) view MUST be associated with the same PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache and the **slicerData** attribute of the CT_PivotCacheDefinition element MUST be "false".

If a slicer cache is associated, as specified by Slicer Cache Relationship to PivotTable View, with one or more PivotTable ([ISO/IEC-29500-1] section 18.10) views, and the slicer source data type is OLAP, the PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache that is associated with the slicer cache and all PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCaches that are associated with the PivotTable ([ISO/IEC-29500-1] section 18.10) views MUST be based on the same OLAP connection ([ISO/IEC-29500-1] section 18.13.5) and the PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCaches associated with the PivotTable ([ISO/IEC-29500-1] section 18.10) views MUST NOT be associated with any slicer cache. The **slicerData** attribute of the CT_PivotCacheDefinition element for each PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache associated with the PivotTable ([ISO/IEC-29500-1] section 18.10) views MUST be "false".

2.3.2.1.3 Slicer Cache Relationship to PivotTable View

A slicer cache, as specified in section 2.3.2.1, can be associated with PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, views by the **pivotTables** group element of the **CT_SlicerCacheDefinition** element, as specified in section 2.6.70.

If the associated PivotTable **PivotCache** of a slicer cache, as specified by the Slicer Cache Relationship to PivotCache, is an OLAP PivotTable **PivotCache**, the slicer items, as specified in section 2.3.2.1.4, in the slicer cache are used to apply PivotTable OLAP manual filters to the PivotTable **hierarchy** specified by the **sourceName** attribute of the **CT_SlicerCacheDefinition** element in all associated PivotTable views of the slicer cache. The **selected** slicer items in the slicer cache are converted into selected PivotTable items in the PivotTable OLAP manual filters by the application to apply the filter state of the slicer cache to the associated PivotTable views.

If the associated PivotTable **PivotCache** of a slicer cache, as specified by Slicer Cache Relationship to PivotCache, is a non-OLAP PivotTable **PivotCache**, the PivotTable **PivotCache** of the PivotTable views and the PivotTable **PivotCache** of the slicer cache MUST be the same.

When an OLAP PivotTable view is associated with an OLAP slicer cache, there MUST NOT be more than one slicer cache for each OLAP hierarchy.

If the associated PivotTable **PivotCache** of a slicer cache, as specified by Slicer Cache Relationship to PivotCache, is a non-OLAP PivotTable **PivotCache**, the slicer items in the slicer cache are used to apply PivotTable non-OLAP manual filters to the **PivotTable** field specified by the **sourceName** attribute of the **CT_SlicerCacheDefinition** element in all associated PivotTable views of the slicer cache. The selected slicer items in the slicer cache are converted into selected PivotTable items in the PivotTable non-OLAP manual filters by the application to apply the filter state of the slicer cache to the associated PivotTable views. See the PivotTable items in [ISO/IEC-29500-1] section 18.10 for more details.

2.3.2.1.4 Slicer Items

Slicer items in a slicer cache represent distinct values in a column of the slicer source data. In the case of slicers based on OLAP slicer source data, the slicer cache is based on an OLAP hierarchy and slicer items represent **OLAP members** within levels of that OLAP hierarchy.

For slicers associated with PivotTable ([ISO/IEC-29500-1] section 18.10) views, each slicer item specifies whether slicer source data exists for that slicer item. For more information, see Slicer Cross Filtering.

Each slicer item also specifies the item selection state, used for filtering, and can specify additional properties. For more information see Non-OLAP Slicer Items and OLAP Slicer Items.

2.3.2.1.4.1 Non-OLAP Slicer Items

The slicer items of a non–OLAP slicer are specified by an ordered sequence of CT_TabularSlicerCacheItem elements. Each slicer item is associated with a PivotTable ([ISO/IEC-29500-1] section 18.10) cache item of the associated PivotTable ([ISO/IEC-29500-1] section 18.10) cache field in the associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache. For more information, see Slicer Cache Relationship to PivotCache.

The associated cache field is specified by the **sourceName** attribute of the CT_SlicerCacheDefinition element and MUST be equal to the **name** attribute of a **CT_CacheField** ([ISO/IEC-29500-4] section A.2) element in the collection of PivotTable ([ISO/IEC-29500-1] section 18.10) cache fields ([ISO/IEC-29500-4] section A.2) of the associated PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache. The associated PivotTable ([ISO/IEC-29500-1] section 18.10) cache item is specified by

the **x** attribute of the CT_TabularSlicerCacheItem element, which contains a PivotTable ([ISO/IEC-29500-1] section 18.10) cache item index of the associated PivotTable ([ISO/IEC-29500-1] section 18.10) cache item in the associated PivotTable ([ISO/IEC-29500-1] section 18.10) cache field. Two non–OLAP slicer items MUST NOT be associated with the same PivotTable ([ISO/IEC-29500-1] section 18.10) cache item.

The order of non–OLAP slicer items in the slicer cache is specified by the **sortOrder**, **crossFilter**, and **customListSort** attributes of the CT_TabularSlicerCache element.

The CT_TabularSlicerCacheItem element also specifies whether the non–OLAP slicer item is selected for filtering and whether data exists in the slicer source data for it. For more information, see Slicer Cross Filtering.

2.3.2.1.4.2 OLAP Slicer Items

A CT_OlapSlicerCache element specifies properties of an OLAP slicer cache, and its **descendant** elements specify OLAP slicer items.

A CT_OlapSlicerCacheRanges element specifies the cache for an OLAP level in an OLAP slicer cache.

The cache is organized into **ranges** of cached OLAP slicer items for each OLAP level in the slicer cache. Each range is specified in a CT_OlapSlicerCacheRange element. The **startItem** attribute of the CT_OlapSlicerCacheRange element specifies the zero-based index of the first OLAP slicer item in this cached range in the ordered collection of all OLAP members that exist in the slicer source data for the associated OLAP level. The collection in the slicer source data is ordered as specified by the **sortOrder** and **crossFilter** attributes of the earlier CT_OlapSlicerCacheLevelData element.

Each cached OLAP slicer item in a range is specified by a CT_OlapSlicerCacheItem element.

The OLAP slicer items that are selected for filtering are specified by the CT_OlapSlicerCacheSelections element.

Each individual OLAP slicer item selected for filtering is specified by a CT_OlapSlicerCacheSelection element.

2.3.2.1.5 Slicer Cross Filtering

Cross filtering is an application behavior that allows one slicer to reflect the results of filtering by another. This behavior exposes whether data exists in the slicer source data for each slicer item when the slicer source data is filtered by the selected slicer items of all associated slicer caches of a PivotTable ([ISO/IEC-29500-1] section 18.10) view, as specified by Slicer Cache Relationship to PivotTable View, and all PivotTable ([ISO/IEC-29500-1] section 18.10) manual filters in the PivotTable ([ISO/IEC-29500-1] section 18.10) view.

If the type of slicer source data is OLAP, the existence of data, after filtering, for a slicer item is specified by the **nd** attribute of the CT_OlapSlicerCacheItem element. If the type of slicer source data is non-OLAP, the existence of data for a slicer item is specified by the **nd** attribute of the CT_TabularSlicerCacheItem element.

If the type of slicer source data is non-OLAP, the **crossFilter** attribute of the CT_TabularSlicerCache element specifies how the non-OLAP slicer items that have no data appear.

If the type of slicer source data is OLAP, the **crossFilter** attribute of the CT_OlapSlicerCacheLevelData element specifies how the OLAP slicer items that have no data are displayed for the OLAP level specified by the **uniqueName** attribute of the CT_OlapSlicerCacheLevelData element.

2.3.2.2 Slicer View

A slicer view specifies the display of a slicer on a worksheet. A slicer view is displayed as a list of slicer items. The slicer view is specified by a CT_Slicer element.

Each slicer view is associated with a slicer cache as specified in Slicer View Relationship to Slicer Cache. The filtering state of slicer items displayed in the slicer view is specified by the associated slicer cache.

Each slicer view is associated with a drawing ([ISO/IEC-29500-1] section 20.5), contained in the Drawings part ([ISO/IEC-29500-1] section 12.3.8). The associated drawing ([ISO/IEC-29500-1] section 20.5) contains a CT_Slicer element that has a **name** attribute that matches the **name** attribute of the CT_Slicer element that specifies the slicer view.

2.3.2.2.1 Slicer View Relationship to Slicer Cache

Each slicer view is associated with a slicer cache. The slicer view is associated with a slicer cache through the **name** attribute of the CT_SlicerCacheDefinition element in the slicer cache that matches the **cache** attribute of the CT_Slicer element that specifies this slicer view.

If a slicer view is associated with an OLAP slicer cache, the slicer view also has an associated OLAP level, specified by the **level** attribute of the CT_Slicer element. In this case, the slicer view displays OLAP Slicer Items of that OLAP level.

There can be multiple slicer views associated with a single slicer cache. There are two main reasons for this:

- For a user-defined OLAP hierarchy with several OLAP levels—for example, a Geography OLAP hierarchy with Country, State, and City OLAP levels —each slicer view is associated with a single OLAP level, providing a mechanism for filtering different OLAP levels of the OLAP hierarchy.
- Multiple slicer views associated with either the same slicer cache (for a non-OLAP slicer cache) or the same OLAP level (for an OLAP slicer cache) provide a mechanism for displaying the filter state in more than one location in the workbook.

2.3.2.3 Slicers and Cube Functions

Each slicer cache has a **defined name** associated with it as specified by the **name** attribute of the CT_SlicerCacheDefinition element.

The value of the **CT_DefinedName** ([ISO/IEC-29500-1] section 18.2.5) element specifying a defined name associated with a slicer cache MUST be #N/A.

If the slicer source data type of a slicer cache is OLAP, cube functions can use the defined name of the slicer cache as a parameter to refer to the selection state of the slicer cache.

2.3.2.4 Slicer Styles

Slicer styles specify the formatting to apply to visual components of slicer views. The **style** attribute of the CT_Slicer element specifies the slicer style to be applied. A slicer style can be either built-in or user-defined. Built-in slicer styles are specified in the CT_Slicer element. User-defined slicer styles are specified in the CT_SlicerStyles element.

A slicer style is an extension of a table style ([ISO/IEC-29500-1] section 18.8) with additional table style ([ISO/IEC-29500-1] section 18.8) elements specific to the formatting of slicer views. A user-

defined slicer style is specified by a CT_SlicerStyle element and the table style ([ISO/IEC-29500-1] section 18.8) it references.

A user-defined slicer style consists of the table style ([ISO/IEC-29500-1] section 18.8) elements from the referenced table style ([ISO/IEC-29500-1] section 18.8) and table style ([ISO/IEC-29500-1] section 18.8) elements specified by a group of CT_SlicerStyleElement elements.

The **slicerStyleElements** element of a CT_SlicerStyle element specifies the slicer-style-specific table style ([ISO/IEC-29500-1] section 18.8) elements of the slicer style. The **name** attribute of the CT_SlicerStyle element references the user-defined table style ([ISO/IEC-29500-1] section 18.8) that specifies the non-slicer-style-specific table style ([ISO/IEC-29500-1] section 18.8) elements of the slicer style.

2.4 Global Elements

2.4.1 f

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

Referenced by: CT_CfRule, CT_Cfvo, CT_DataValidationFormula, CT_SparklineGroup, CT_Sparkline, CT_PivotUserEdit

The **f** element is an **ST_Formula** element, as specified in [ISO/IEC-29500-1] section 18.18.35, that specifies a generic formula that adheres to section 2.2.2.

An application can adjust the cell references within this formula when the worksheet layout changes, even when the containing **ext** element, as specified in [ISO/IEC-29500-1] section 18.2.7, is not recognized by the application. See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

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

```
<xsd:element name="f" type="x:ST_Formula"/>
```

See section 5.2 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.2 ref

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

The **ref** element is an **ST_Ref** type element, as specified in section 2.7.1, that specifies a cell reference.

An application can adjust this cell reference when the worksheet layout changes, even when the containing **ext** element, as specified in [ISO/IEC-29500-1] section 18.2.7, is not recognized by the application. See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

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

```
<xsd:element name="ref" type="ST_Ref"/>
```

See section 5.2 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.3 sqref

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

Referenced by: CT_ConditionalFormatting, CT_DataValidation, CT_Sparkline, CT_ProtectedRange, CT_IgnoredError

An **sqref** element is an **ST_Sqref** type element, as specified in section 2.7.2, that specifies a list of cell references.

An application can adjust these cell references when the worksheet layout changes, even when the containing **ext** element, as specified in [ISO/IEC-29500-1] section 18.2.7, is not recognized by the application. See [ISO/IEC-29500-3] section 10.1.2 for more information about how extension lists are used.

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

```
<xsd:element name="sqref" type="ST_Sqref"/>
```

See section 5.2 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.4 conditionalFormattings

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **conditionalFormattings** element is a **CT_ConditionalFormattings** type element, as specified in section 2.6.1, that specifies conditional formatting information for the worksheet. See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="conditionalFormattings" type="CT_ConditionalFormattings"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.5 dataValidations

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

The **dataValidations** element is a **CT_DataValidations** type element, as specified in section 2.6.3, that specifies a group of **data validation** items on the **sheet (1)**. This element also specifies data validation properties of a sheet (1) that are used by the application user interface. See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="dataValidations" type="CT_DataValidations"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.6 sparklineGroups

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **sparklineGroups** element is a **CT_SparklineGroups** type element, as specified in section 2.6.6, that specifies the groups of **sparklines** on the sheet (1). See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="sparklineGroups" type="CT_SparklineGroups"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.7 slicerList

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **slicerList** element is a **CT_SlicerRefs** type element, as specified in section 2.6.11, that specifies a list of slicer, as specified in section 2.3.2, part identifiers for the worksheet. See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="slicerList" type="CT_SlicerRefs"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.8 protectedRanges

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **protectedRanges** element is a **CT_ProtectedRanges** type element, as specified in section 2.6.55, that specifies a group of protected ranges on the sheet (1). See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="protectedRanges" type="CT_ProtectedRanges"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.9 ignoredErrors

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

An **ignoredErrors** element is a **CT_IgnoredErrors** type element, as specified in section 2.6.53, that specifies a list of **cell** ranges and the types of cell errors that are to be ignored for each of those specific cell ranges. See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="ignoredErrors" type="CT_IgnoredErrors"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.10 pivotCaches

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **pivotCaches** element is a **CT_PivotCaches** element, as specified in [ISO/IEC-29500-4] section A.2, that specifies a list of **PivotTable**, as specified in [ISO/IEC-29500-1] section 18.10, **PivotCache** identifier elements. The list of elements specifies the PivotTable **PivotCaches** used by slicer caches, as specified in section 2.1.4, with OLAP slicer source data, as specified in section 2.3.2.1.1. See section 2.2.4.9 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="pivotCaches" type="x:CT_PivotCaches"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.11 slicerCaches

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **slicerCaches** element is a **CT_SlicerCaches** type element, as specified in section 2.6.13, that specifies a group of slicer cache, as specified in section 2.1.4, identifiers for the workbook. See section 2.2.4.9 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="slicerCaches" type="CT_SlicerCaches"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.12 workbookPr

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **workbookPr** element is a **CT_WorkbookPr** element, as specified in section 2.6.10, that specifies additional properties for a workbook. See section 2.2.4.9 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="workbookPr" type="CT_WorkbookPr"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.13 calculatedMember

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **calculatedMember** element is a **CT_CalculatedMember** type element, as specified in section 2.6.15, that specifies extended properties of a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, OLAP calculated member. See section 2.2.4.5 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="calculatedMember" type="CT_CalculatedMember"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.14 cacheHierarchy

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **cacheHierarchy** element is a **CT_CacheHierarchy** type element, as specified in section 2.6.24, that specifies the extended properties of a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, named set. See section 2.2.4.5 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="cacheHierarchy" type="CT_CacheHierarchy"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.15 dataField

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **dataField** element is a **CT_DataField** type element, as specified in section 2.6.25, that specifies extended information about a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, data field item. See section 2.2.4.4 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="dataField" type="CT_DataField"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.16 pivotField

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **pivotField** element is a **CT_PivotField** element, as specified in section 2.6.31, that specifies properties of a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, field. See section 2.2.4.4 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="pivotField" type="CT_PivotField"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.17 pivotTableDefinition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **pivotTableDefinition** element is a **CT_PivotTableDefinition** type element, as specified in section 2.6.32, that specifies additional properties of the PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, view. See section 2.2.4.4 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="pivotTableDefinition" type="CT_PivotTableDefinition"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.18 pivotCacheDefinition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **pivotCacheDefinition** element is a **CT_PivotCacheDefinition** type element, as specified in section 2.6.33, that specifies the extended properties of a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, **PivotCache** definition. See section 2.2.4.5 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="pivotCacheDefinition" type="CT_PivotCacheDefinition"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.19 connection

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **connection** element is a **CT_Connection** type element, as specified in section 2.6.34, that specifies the extended properties of an external connection, as specified in [ISO/IEC-29500-1] section 18.13. If this element exists, the **type** attribute of the ancestor **CT_Connection** element, as specified in [ISO/IEC-29500-4] section A.2, MUST be equal to "5". See section 2.2.4.1 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="connection" type="CT_Connection"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.20 table

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **table** element is a **CT_Table** type element, as specified in section 2.6.35, that specifies alternate text properties for the table. See section 2.2.4.8 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="table" type="CT_Table"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.21 slicerStyles

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **slicerStyles** element is a **CT_SlicerStyles** type element, as specified in section 2.6.51, that specifies a group of slicer styles, as specified in section 2.3.2.4. See section 2.2.4.7 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="slicerStyles" type="CT_SlicerStyles"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.22 dxfs

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **dxfs** element is a **CT_Dxfs** element, as specified in [ISO/IEC-29500-4] section A.2, that specifies the list of style differential formats (DXFs), as specified in [ISO/IEC-29500-1] section 18.8. See section 2.2.4.7 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="dxfs" type="x:CT_Dxfs"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.23 oleItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

An **oleItem** element is a **CT_OleItem** type element, as specified in section 2.6.46, that specifies an OLE data item, as specified in [ISO/IEC-29500-1] section 18.14, with associated cached values. See section 2.2.4.3 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="oleItem" type="CT_OleItem"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.24 pivotHierarchy

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **pivotHierarchy** element is a **CT_PivotHierarchy** type element, as specified in section 2.6.47, that specifies multiple data items based on the same **OLAP measure** that exists in a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, view. See section 2.2.4.4 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="pivotHierarchy" type="CT_PivotHierarchy"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.25 cacheField

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

The **cacheField** element is a **CT_CacheField** type element, as specified in section 2.6.48, that specifies that duplicate OLAP measures exist in a PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, **PivotCache** definition. See section 2.2.4.5 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="cacheField" type="CT_CacheField"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.26 id

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

An **id** element is an **ST_Guid** element, as specified in [ISO/IEC-29500-1] section 22.9.2.4, that specifies an identifier for a conditional formatting rule. See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="id" type="x:ST_Guid"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.27 iconFilter

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

An **iconFilter** element is a **CT_IconFilter** type element, as specified in section 2.6.57, that specifies the properties of an **icon** filter. See section 2.2.4.4, section 2.2.4.8, and section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="iconFilter" type="CT_IconFilter"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.28 filter

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **filter** element is a **CT_Filter** type element, as specified in section 2.6.58, that specifies the properties of a filter. See section 2.2.4.4, section 2.2.4.8, and section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="filter" type="CT_Filter"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.29 customFilters

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **customFilters** element is a **CT_CustomFilters** type element, as specified in section 2.6.59, that specifies the properties of **custom filters**. See section 2.2.4.4, section 2.2.4.8, and section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="customFilters" type="CT_CustomFilters"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.30 sortCondition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **sortCondition** element is a **CT_SortCondition** type element, as specified in section 2.6.61, that specifies a **sort condition** to apply to a range. See section 2.2.4.4, section 2.2.4.6, section 2.2.4.8, and section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="sortCondition" type="CT_SortCondition"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.31 sourceConnection

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **sourceConnection** element is a **CT_SourceConnection** type element, as specified in section 2.6.62, that specifies the name of a connection of the cache source element on a pivot cache. See section 2.2.4.5 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="sourceConnection" type="CT_SourceConnection"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.32 formControlPr

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **formControlPr** element is a **CT_FormControlPr** type element, as specified in section 2.6.65, that specifies properties of form control objects. This element is the root element of the control properties part, as specified in section 2.1.1.

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

```
<xsd:element name="formControlPr" type="CT_FormControlPr"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.33 datastoreItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **datastoreItem** element is a **CT_DatastoreItem** type element, as specified in section 2.6.66, that specifies properties for an embedded custom data part, as specified in section 2.1.2. This element is the root element of the custom data properties part, as specified in section 2.1.3.

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

```
<xsd:element name="datastoreItem" type="CT_DatastoreItem"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.34 slicers

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **slicers** element is a **CT_Slicers** type element, as specified in section 2.6.67, that specifies all the slicer views, as specified in section 2.3.2.2, on the sheet (1). This element is the root element of the slicers part, as specified in section 2.3.2.

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

```
<xsd:element name="slicers" type="CT_Slicers"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.35 slicer

Target namespace: http://schemas.microsoft.com/office/drawing/2010/slicer

A **slicer** element is a **CT_Slicer** type element, as specified in section 2.6.69, that specifies which slicer view, as specified in section 2.3.2.2, is associated with this drawing element. See section 2.2.4.2 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

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

```
<xsd:element name="slicer" type="CT_Slicer"/>
```

See section 5.4 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.4.36 slicerCacheDefinition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

A **slicerCacheDefinition** element is a **CT_SlicerCacheDefinition** type element, as specified in section 2.6.70, that specifies a slicer cache, as specified in section 2.3.2.1. This element is the root element of the slicer cache part.

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

```
<xsd:element name="slicerCacheDefinition" type="CT_SlicerCacheDefinition"/>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.5 Global Attributes

2.5.1 dyDescent

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/ac

The **dyDescent** attribute is a **double** attribute, as specified in [XMLSCHEMA2] section 3.2.5, that specifies the vertical distance in **pixels** from the bottom of the cells in the current **row (2)** to the typographical baseline of the cell content if, hypothetically, the **zoom level** for the sheet (1) containing this row (2) is 100 percent and the cell has bottom-alignment formatting. See section 2.2.4.10 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this attribute.

```
<xsd:attribute name="dyDescent" type="xsd:double"/>
```

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

2.5.2 knownFonts

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/ac

The **knownFonts** attribute is a **Boolean** attribute, as specified in ([XMLSCHEMA2] section 3.2.2, that specifies the typographical descent information that is stored in the workbook. See section 2.2.4.7 for how this element integrates with the Office Open XML file formats specified in [ISO/IEC-29500-1].

The following W3C XML Schema ([XMLSCHEMA1] section 2.1) fragment specifies the contents of this attribute.

```
<xsd:attribute name="knownFonts" type="xsd:boolean"/>
```

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

2.6 Complex Types

2.6.1 CT_ConditionalFormattings

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: conditionalFormattings

The **CT_ConditionalFormattings** complex type specifies conditional formatting information for the worksheet.<5>

Child Elements:

conditionalFormatting : A **CT_ConditionalFormatting** element (section 2.6.2) that specifies the conditional formatting properties for a range.

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

```
<xsd:complexType name="CT_ConditionalFormattings">
  <xsd:sequence>
    <xsd:element name="conditionalFormatting" type="CT_ConditionalFormatting" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.2 CT_ConditionalFormatting

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_ConditionalFormattings

The **CT_ConditionalFormatting** complex type specifies conditional formatting properties for a range.

Child Elements:

cfRule : A **CT_CfRule** element (section 2.6.27) that specifies a conditional formatting rule for this range.

xm:sqref : An **sqref** element (section 2.4.3) that specifies the range this conditional formatting applies to.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

pivot : A **Boolean** ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether this conditional formatting is applied only to a PivotTable. MUST be a value from the following table.

Value	Meaning
"true"	The area specified by **sqref** only includes cells that are part of a PivotTable data area.
"false"	The area specified by **sqref** includes cells that are not part of a PivotTable data area.

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

```
<xsd:complexType name="CT_ConditionalFormatting">
  <xsd:sequence>
    <xsd:element name="cfRule" type="CT_CfRule" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element ref="xm:sqref" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" minOccurs="0" type="x:CT_ExtensionList"/>
  </xsd:sequence>
  <xsd:attribute name="pivot" type="xsd:boolean" default="false" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.3 CT_DataValidations

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: dataValidations

CT_DataValidations is a complex type that specifies a group of data validation items on the sheet. MUST contain less than or equal to 65,534 elements. This complex type also specifies data validation properties of a sheet that are used by the application UI.

Child Elements:

dataValidation : A **CT_DataValidation** element (section 2.6.5) that specifies the properties for a single data validation item defined on a range of the sheet.

Attributes:

disablePrompts : A **Boolean** ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether all data validation input prompts are disabled for this sheet.

xWindow : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the x-coordinate, relative to the application window, of the upper-left corner of the data validation input prompt, measured in pixels. This value MUST be less than or equal to 65,535. <6>

yWindow : An **unsignedInt** attribute that specifies the y-coordinate, relative to the application window, of the upper-left corner of the data validation input prompt, measured in pixels. This value MUST be less than or equal to 65,535. <7>

count : An **unsignedInt** attribute that specifies the number of **dataValidation** child elements of this element.

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

```
<xsd:complexType name="CT_DataValidations">
  <xsd:sequence>
```

```
    <xsd:element name="dataValidation" type="CT_DataValidation" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="disablePrompts" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="xWindow" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="yWindow" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.4 CT_DataValidationFormula

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_DataValidation

CT_DataValidationFormula is a complex type that specifies a formula used in data validation.

Child Elements:

xm:f : An **f** element (section 2.4.1) that specifies a formula for the data validation. The formula MUST adhere to the grammar provided in section 2.2.2, with the following restrictions:

- MUST NOT use the ref-infix-operator, local-cell-reference, bang-reference, bang-name, array-constant, sheet-range-reference, or structure-reference production rules.
- MUST be an external-cell-reference if used by the **formula1** element of the ancestor **CT_DataValidation** element (section 2.6.5), and the **formula1** element of the ancestor **CT_DataValidation** element uses the external-cell-reference production rule, and the **type** attribute of the ancestor **CT_DataValidation** element is "list".
- MUST NOT be an external-cell-reference that references more than one cell if used by the **formula1** element of the ancestor **CT_DataValidation** element and the **type** attribute of the ancestor **CT_DataValidation** element is not "list".
- MUST NOT be an external-cell-reference that references more than one cell if used by the **formula2** element of the ancestor **CT_DataValidation** element.

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

```
<xsd:complexType name="CT_DataValidationFormula">
  <xsd:sequence>
    <xsd:element ref="xm:f" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.5 CT_DataValidation

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_DataValidations

CT_DataValidation is a complex type that specifies data validation for a range on this sheet.

Child Elements:

formula1 : A **CT_DataValidationFormula** element (section 2.6.4) that specifies the first formula for the data validation.

- If **operator** is "between" or "notBetween" and **type** is not "custom", "list", or "none", this formula is used as the lesser of two bounding values and MUST exist.
- If **operator** is not "between" or "notBetween", or **type** is "custom" or "list", this formula is the only formula and MUST exist.
- If the **type** is "none", this formula MUST NOT exist.

formula2 : A **CT_DataValidationFormula** element that specifies the second formula for the data validation.

- If **operator** is "between" or "notBetween" and **type** is not "custom", "list", or "none", this formula is used as the greater of two bounding values and MUST exist.
- If **operator** is not "between" or "notBetween", or **type** is "custom", "list", or "none", this formula MUST NOT exist.

xm:sqref : An **sqref** element (section 2.4.3) that specifies ranges to which data validation is applied.

Attributes:

type : An **ST_DataValidationType** ([ISO/IEC-29500-1] section 18.18.21) attribute that specifies the type of data validation.

errorStyle : An **ST_DataValidationErrorStyle** ([ISO/IEC-29500-1] section 18.18.18) attribute that specifies the style of error alert used for this data validation.

imeMode : An **ST_DataValidationImeMode** ([ISO/IEC-29500-1] section 18.18.19) attribute that specifies the **Input Method Editor (IME)** mode enforced by this data validation.

operator : An **ST_DataValidationOperator** ([ISO/IEC-29500-1] section 18.18.20) attribute that specifies the relational operator used with this data validation. If **type** is "custom", "list", or "none", the value of the **operator** attribute is undefined and MUST be ignored.

allowBlank : A **Boolean** ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the data validation treats empty or blank entries as valid.

showDropDown : A **Boolean** attribute that specifies whether to display the drop-down combo box for a list type data validation.

Value of showDropDown	Value of type	Meaning
"true"	list	Displays the drop-down combo box.
"false"	list	Suppresses the drop-down combo box.

showInputMessage : A **Boolean** attribute that specifies whether to display the input prompt message.

showErrorMessage : A **Boolean** attribute that specifies whether to display the error alert message.

errorTitle : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the text of the title bar of the error alert. The length of this string MUST be less than or equal to 32 characters.

error : An **ST_Xstring** attribute that specifies the message text of the error alert. The length of this string MUST be less than or equal to 225 characters.

promptTitle : An **ST_Xstring** attribute that specifies the text of the title bar of the input prompt. The length of this string MUST be less than or equal to 32 characters.

prompt : An **ST_Xstring** attribute that specifies the message text of the input prompt. This string MUST be less than or equal to 255 characters.

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

```
<xsd:complexType name="CT_DataValidation">
  <xsd:sequence>
    <xsd:element name="formula1" type="CT_DataValidationFormula" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="formula2" type="CT_DataValidationFormula" minOccurs="0"
maxOccurs="1"/>
    <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="x:ST_DataValidationType" use="optional" default="none"/>
  <xsd:attribute name="errorStyle" type="x:ST_DataValidationErrorStyle" use="optional"
default="stop"/>
  <xsd:attribute name="imeMode" type="x:ST_DataValidationImeMode" use="optional"
default="noControl"/>
  <xsd:attribute name="operator" type="x:ST_DataValidationOperator" use="optional"
default="between"/>
  <xsd:attribute name="allowBlank" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="showDropDown" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="showInputMessage" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="showErrorMessage" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="errorTitle" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="error" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="promptTitle" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="prompt" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.6 CT_SparklineGroups

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: sparklineGroups

CT_SparklineGroups is a complex type that specifies the groups of sparklines on the sheet. MUST contain fewer than 2^{31} elements.

Child Elements:

sparklineGroup : A **CT_SparklineGroup** element (section 2.6.7) that specifies properties for a single sparkline group.

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

```
<xsd:complexType name="CT_SparklineGroups">
  <xsd:sequence>
    <xsd:element name="sparklineGroup" type="CT_SparklineGroup" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.7 CT_SparklineGroup

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SparklineGroups

CT_SparklineGroup is a complex type that specifies properties for a sparkline group.

Child Elements:

colorSeries : A **CT_Color** ([ISO/IEC-29500-4] section A.2) element that specifies the color for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorNegative : A **CT_Color** element that specifies the color of the negative **data points** for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorAxis : A **CT_Color** element that specifies the color of the horizontal axis for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorMarkers : A **CT_Color** element that specifies the color of the **data markers** for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorFirst : A **CT_Color** element that specifies the color of the first data point for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorLast : A **CT_Color** element that specifies the color of the last data point for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorHigh : A **CT_Color** element that specifies the color of the highest data point for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

colorLow : A **CT_Color** element that specifies the color of the lowest data point for each sparkline in this sparkline group. The **auto** attribute of the **CT_Color** element MUST NOT exist.

xm:f : An **f** element (section 2.4.1) that specifies the date range for the sparkline group. The syntax, as specified in section 2.2.2, for this **f** element is the following:

sparklinegroup-formula = single-sheet-area / [single-sheet-prefix / book-prefix] name

Additionally, if a single-sheet-area is specified, that single-sheet-area MUST contain cells from either a single row or a single column.

sparklines : A **CT_Sparklines** element (section 2.6.8) that specifies properties for individual sparklines.

Attributes:

manualMax : A **double** ([XMLSCHEMA2] section 3.2.5) attribute that specifies the maximum for the vertical axis that is shared across all sparklines in this sparkline group. MUST NOT exist if **maxAxisType** does not equal "custom".

manualMin : A **double** attribute that specifies the minimum for the vertical axis that is shared across all sparklines in this sparkline group. MUST NOT exist if **minAxisType** does not equal "custom".

lineWeight : A **double** attribute that specifies the line weight for each sparkline in the sparkline group, where the line weight is measured in **points**. MUST be greater than or equal to zero, and MUST be less than or equal to 1584.

type : An **ST_SparklineType** attribute (section 2.7.5) that specifies the type of the sparkline group.

dateAxis : A **Boolean** attribute that specifies whether this sparkline group uses a date axis.

Value of dateAxis	Meaning
"false"	No date axis is specified for this sparkline group.
"true"	A date axis is specified for this sparkline group.

displayEmptyCellsAs : An **ST_DispBlanksAs** attribute (section 2.7.3) that specifies how empty cells are plotted.

markers : A **Boolean** attribute that specifies whether data markers are displayed for each sparkline in this sparkline group.

high : A **Boolean** attribute that specifies whether the data points with the highest value are formatted differently for each sparkline in this sparkline group.

low : A **Boolean** attribute that specifies whether the data points with the lowest value are formatted differently for each sparkline in this sparkline group.

first : A **Boolean** attribute that specifies whether the first data point is formatted differently for each sparkline in this sparkline group.

last : A **Boolean** attribute that specifies whether the last data point is formatted differently for each sparkline in this sparkline group.

negative : A **Boolean** attribute that specifies whether the negative data points are formatted differently for each sparkline in this sparkline group.

displayXAxis : A **Boolean** attribute that specifies whether the horizontal axis is displayed for each sparkline in this sparkline group.

displayHidden : A **Boolean** attribute that specifies whether data in **hidden** cells are plotted for the sparklines in this sparkline group.

minAxisType : An **ST_SparklineAxisMinMax** attribute (section 2.7.4) that specifies how the vertical axis minimums for the sparklines in this sparkline group are calculated.

maxAxisType : An **ST_SparklineAxisMinMax** attribute that specifies how the vertical axis maximums for the sparklines in this sparkline group are calculated.

rightToLeft : A **Boolean** attribute that specifies whether each sparkline in the sparkline group is displayed in a **right-to-left** manner.

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

```
<xsd:complexType name="CT_SparklineGroup">
  <xsd:sequence>
    <xsd:element name="colorSeries" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorNegative" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorAxis" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorMarkers" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorFirst" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorLast" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorHigh" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element name="colorLow" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
    <xsd:element ref="xm:f" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="sparklines" type="CT_Sparklines" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="manualMax" type="xsd:double" use="optional"/>
  <xsd:attribute name="manualMin" type="xsd:double" use="optional"/>
  <xsd:attribute name="lineWeight" type="xsd:double" use="optional" default="0.75"/>
  <xsd:attribute name="type" type="ST_SparklineType" use="optional" default="line"/>
  <xsd:attribute name="dateAxis" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="displayEmptyCellsAs" type="ST_DispBlanksAs" use="optional"
default="zero"/>
  <xsd:attribute name="markers" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="high" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="low" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="first" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="last" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="negative" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="displayXAxis" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="displayHidden" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="minAxisType" type="ST_SparklineAxisMinMax" use="optional"
default="individual"/>
  <xsd:attribute name="maxAxisType" type="ST_SparklineAxisMinMax" use="optional"
default="individual"/>
  <xsd:attribute name="rightToLeft" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.8 CT_Sparklines

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SparklineGroup

CT_Sparklines is a complex type that specifies a list of individual sparklines in a sparkline group. MUST contain fewer than 2^{31} elements.

Child Elements:

sparkline : A **CT_Sparkline** element (section 2.6.9) that specifies properties for an individual sparkline.

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

```
<xsd:complexType name="CT_Sparklines">
  <xsd:sequence>
    <xsd:element name="sparkline" type="CT_Sparkline" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.9 CT_Sparkline

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_Sparklines

CT_Sparkline is a complex type that specifies information for a single sparkline.

Child Elements:

xm:f : An **f** element (section 2.4.1) that specifies the data range for this sparkline. The syntax, specified in section 2.2.2, for this element is the following:

sparkline-formula = single-sheet-area / [single-sheet-prefix / book-prefix] name

Additionally, if a single-sheet-area is specified, that single-sheet-area MUST contain cells from either a single row or a single column.

xm:sqref : An **sqref** element (section 2.4.3) that specifies the cell in which the sparkline is located. This **sqref** element MUST contain exactly one **ref** element (section 2.4.2) that MUST specify exactly one cell.

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

```
<xsd:complexType name="CT_Sparkline">
  <xsd:sequence>
    <xsd:element ref="xm:f" minOccurs="0" maxOccurs="1"/>
    <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.10 CT_WorkbookPr

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: workbookPr

CT_WorkbookPr is a complex type that specifies additional properties for a workbook.

Attributes:

defaultImageDpi : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the resolution in which images in the workbook is saved, in DPI, when the **autoCompressPictures** attribute of the **WorkbookPr** ([ISO/IEC-29500-1] section 18.2.28) element is "true" and the **CT_UseLocalDpi** ([MS-ODRAWXML] section 2.3.4) element of the drawings part ([ISO/IEC-29500-1] section 12.3.8) corresponding to the image being saved is "false". MUST be equal to "96", "150", or "220".

discardImageEditData : A **Boolean** ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether all **CT_Photo** ([MS-ODRAWXML] section 2.3.3) elements and cropped out areas of images in the workbook are not saved.

accuracyVersion : An **unsignedInt** attribute that specifies how functions are calculated in the workbook. SHOULD be equal to zero ("0").<8>

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

```
<xsd:complexType name="CT_WorkbookPr">
  <xsd:attribute name="defaultImageDpi" type="xsd:unsignedInt" default="220"/>
  <xsd:attribute name="discardImageEditData" type="xsd:boolean" default="false"/>
  <xsd:attribute name="accuracyVersion" type="xsd:unsignedInt" default="0"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.11 CT_SlicerRefs

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: slicerList

CT_SlicerRefs is a complex type that specifies a list of slicer (section 2.3.2) part identifiers for the worksheet. MUST contain exactly one slicer part identifier.

Child Elements:

slicer : A **CT_SlicerRef** element (section 2.6.12) that specifies the slicer part identifier for the worksheet.

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

```
<xsd:complexType name="CT_SlicerRefs">
  <xsd:sequence>
    <xsd:element name="slicer" type="CT_SlicerRef" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.12 CT_SlicerRef

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerRefs

A complex type that specifies a relationship identifier of the part that contains the slicers in this worksheet.

Attributes:

r:id : An **ST_RelationshipId** ([ISO/IEC-29500-1] section 22.8.2.1) attribute that specifies a relationship identifier of the part that contains the slicers in this worksheet.

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

```
<xsd:complexType name="CT_SlicerRef">
  <xsd:attribute ref="r:id" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.13 CT_SlicerCaches

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: slicerCaches

A complex type that specifies a list of slicer cache part identifiers for the workbook. MUST contain fewer than 2^{31} elements.

Child Elements:

slicerCache : A CT_SlicerCache element that specifies a slicer cache part identifier in this workbook.

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

```
<xsd:complexType name="CT_SlicerCaches">
  <xsd:sequence>
    <xsd:element name="slicerCache" type="CT_SlicerCache" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.14 CT_SlicerCache

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerCaches

A complex type that specifies a relationship identifier to a slicer cache part in this workbook.

Attributes:

r:id : An **ST_RelationshipId** ([ISO/IEC-29500-1] section 22.8.2.1) attribute that specifies a relationship identifier to a slicer cache part in this workbook.

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

```
<xsd:complexType name="CT_SlicerCache">
  <xsd:attribute ref="r:id" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.15 CT_CalculatedMember

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: calculatedMember

This complex type specifies extended properties of a PivotTable ([ISO/IEC-29500-1] section 18.10) OLAP calculated member.

Child Elements:

tupleSet : A **CT_TupleSet** element (section 2.6.16) that specifies OLAP tuples within this **OLAP named set**.

Attributes:

displayFolder : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the display folder of this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set. The length of this value MUST be less than 65,536 characters. MUST NOT exist if the **set** attribute in the ancestor **CT_CalculatedMember** ([ISO/IEC-29500-4] section A.2) element is zero ("0").

flattenHierarchies : A **Boolean** ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to display members from different OLAP levels of the same PivotTable cache hierarchy of this **PivotTable** named set in the same **PivotTable** field. MUST NOT exist if the **set** attribute in the ancestor **CT_CalculatedMember** element is zero ("0").

Value	Meaning
"0"	Each member from a different level of the same PivotTable cache hierarchy of this **PivotTable** named set is displayed in a separate **PivotTable** field.
"1"	All members from different levels of the same PivotTable cache hierarchy of this **PivotTable** named set are displayed in the same **PivotTable** field.

dynamicSet : A **Boolean** attribute that specifies whether this **PivotTable** named set is a dynamic OLAP named set. MUST NOT exist if the **set** attribute in the ancestor **CT_CalculatedMember** element is zero ("0").

Value	Meaning
"0"	This **PivotTable** named set is a static OLAP named set.
"1"	This **PivotTable** named set is a dynamic OLAP named set.

hierarchizeDistinct : A **Boolean** attribute that specifies whether to automatically order and remove duplicates from this **PivotTable** named set. MUST NOT exist if the **set** attribute in the ancestor **CT_CalculatedMember** element is zero ("0").

Value	Meaning
"0"	Do not automatically order and remove duplicates from this **PivotTable** named set.
"1"	Automatically order and remove duplicates from this **PivotTable** named set.

mdxLong : An **ST_Xstring** attribute that specifies **multidimensional expression (MDX)** of the PivotTable OLAP calculated member. The length of this attribute MUST be zero or it MUST be greater than 32,767 characters and less than 1,073,741,823 characters. If this value is greater than 32,767 characters, the length of the **mdx** attribute in the ancestor **CT_CalculatedMember** element MUST be "1" and the first character of the **mdx** attribute MUST be equal to " ", the space character (0x0020).

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

```
<xsd:complexType name="CT_CalculatedMember">
  <xsd:sequence>
    <xsd:element name="tupleSet" minOccurs="0" maxOccurs="1" type="CT_TupleSet"/>
  </xsd:sequence>
  <xsd:attribute name="displayFolder" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="flattenHierarchies" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="dynamicSet" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="hierarchizeDistinct" type="xsd:boolean" use="optional"
default="true"/>
  <xsd:attribute name="mdxLong" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.16 CT_TupleSet

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_CalculatedMember

A complex type that specifies an OLAP named set.

Child Elements:

headers : A CT_TupleSetHeaders element that specifies the MDX unique names of the OLAP hierarchies and the MDX unique names of the OLAP levels specified by this OLAP named set.

rows : A CT_TupleSetRows element that specifies the OLAP tuples specified by this OLAP named set.

Attributes:

rowCount : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of OLAP tuples specified by this OLAP named set. MUST equal the number of CT_TupleSetRow elements within the **rows** element. **rowCount** * **columnCount** MUST be less than or equal to 3,000.

columnCount : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of MDX unique names of the OLAP hierarchies and the MDX unique names of the OLAP levels specified by this OLAP named set. MUST equal the number of CT_TupleSetHeader elements within the **headers** element. **rowCount** * **columnCount** MUST be less than or equal to 3,000.

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

```
<xsd:complexType name="CT_TupleSet">
  <xsd:sequence>
    <xsd:element name="headers" type="CT_TupleSetHeaders" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="rows" type="CT_TupleSetRows" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="rowCount" type="xsd:unsignedInt" use="optional" default="1"/>
  <xsd:attribute name="columnCount" type="xsd:unsignedInt" use="optional" default="1"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.17 CT_TupleSetHeaders

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TupleSet

A complex type that specifies the MDX unique names of the OLAP hierarchies and the MDX unique names of the OLAP levels of the OLAP named set.

Child Elements:

header : CT_TupleSetHeader elements that specify the MDX unique names of the OLAP hierarchies and the MDX unique names of the OLAP levels of the OLAP named set. The number of these elements MUST be equal to the value of the **columnCount** attribute in the CT_TupleSet element that is the ancestor of this element.

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

```
<xsd:complexType name="CT_TupleSetHeaders">
  <xsd:sequence>
    <xsd:element name="header" type="CT_TupleSetHeader" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.18 CT_TupleSetHeader

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TupleSetHeaders

A complex type that specifies the MDX unique name of the OLAP hierarchy and the MDX unique name of the OLAP level of the OLAP named set that is specified by the CT_TupleSet element that is an ancestor of this element.

Attributes:

uniqueName : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of the OLAP level. MUST be less than or equal to 65,535 characters in length.

hierarchyName : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of the OLAP hierarchy. MUST be less than or equal to 65,535 characters in length.

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

```
<xsd:complexType name="CT_TupleSetHeader">
  <xsd:attribute name="uniqueName" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="hierarchyName" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.19 CT_TupleSetRows

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TupleSet

A complex type that specifies the OLAP tuples for this OLAP named set.

Child Elements:

row : CT_TupleSetRow elements that specify the OLAP tuples for this OLAP named set. The number of these elements MUST be equal to the value of the **rowCount** attribute in the parent CT_TupleSet element.

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

```
<xsd:complexType name="CT_TupleSetRows">
  <xsd:sequence>
    <xsd:element name="row" type="CT_TupleSetRow" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.20 CT_TupleSetRow

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TupleSetRows

A complex type that specifies an OLAP tuple for this OLAP named set.

Child Elements:

rowItem : CT_TupleSetRowItem elements that specify the OLAP members that are part of the OLAP tuple that is specified by this CT_TupleSetRow element. The number of these elements MUST

be equal to value of the **columnCount** attribute in the CT_TupleSet element that is an ancestor of this element.

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

```
<xsd:complexType name="CT_TupleSetRow">
  <xsd:sequence>
    <xsd:element name="rowItem" type="CT_TupleSetRowItem" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.21 CT_TupleSetRowItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TupleSetRow

A complex type that specifies an OLAP member that is part of an OLAP tuple.

Attributes:

u : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of this OLAP member. MUST be less than or equal to 65,535 characters in length.

d : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies a display name for this OLAP member. MUST be less than or equal to 65,535 characters in length.

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

```
<xsd:complexType name="CT_TupleSetRowItem">
  <xsd:attribute name="u" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="d" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.22 CT_SetLevels

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_CacheHierarchy

A complex type that specifies a list of CT_SetLevel elements that specify the OLAP levels of the **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set.

Child Elements:

setLevel : A CT_SetLevel element that specifies an OLAP level of the PivotTable ([ISO/IEC-29500-1] section 18.10) cache hierarchy of the **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set.

Attributes:

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of child **setLevel** elements of this element.

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

```
<xsd:complexType name="CT_SetLevels">
  <xsd:sequence>
    <xsd:element name="setLevel" minOccurs="1" maxOccurs="unbounded" type="CT_SetLevel"/>
  </xsd:sequence>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.23 CT_SetLevel

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SetLevels

A complex type that specifies an OLAP level of the **PivotTable** ([ISO/IEC-29500-1] section 18.10) cache hierarchy of a **PivotTable** named set.

Attributes:

hierarchy : An **int** ([XMLSCHEMA2] section 3.3.17) attribute that specifies a reference to the PivotTable cache hierarchy. MUST be a value from the following table.

Value	Meaning
"-2"	The PivotTable measure cache hierarchy is used.
"-1"	No PivotTable cache hierarchy is used.
Greater than or equal to zer	A zero-based PivotTable cache hierarchy index. The referenced **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) element specifies the PivotTable cache hierarchy that is used. MUST be less than the number of **CT_CacheHierarchy** elements within the **CT_CacheHierarchies** ([ISO/IEC-29500-1] section 18.10) element.

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

```
<xsd:complexType name="CT_SetLevel">
  <xsd:attribute name="hierarchy" use="required" type="xsd:int"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.24 CT_CacheHierarchy

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: cacheHierarchy

This complex type specifies the extended properties of a **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set. When an element of this type is present, the **set** attribute of the ancestor **cacheHierarchy** element of type **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) MUST be "true".

Child Elements:

setLevels : A CT_SetLevels element that specifies the OLAP levels of the hierarchy that is used by this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set.

Attributes:

flattenHierarchies : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to display members from different levels of the same PivotTable ([ISO/IEC-29500-1] section 18.10) cache hierarchy of this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set in the same **PivotTable** ([ISO/IEC-29500-1] section 18.10) field. MUST be "false" if **ignore** is "true". If a CT_CalculatedMember element that corresponds to the **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set exists, this attribute MUST be equal to the **flattenHierarchies** attribute of the CT_CalculatedMember element.

ignore	flattenHierarchies	Meaning
"true"	"false"	The ancestor **cacheHierarchy** element of type **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) of this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set is discarded.
"false"	"false"	Each member from a different level of the same PivotTable ([ISO/IEC-29500-1] section 18.10) cache hierarchy of this PivotTable ([ISO/IEC-29500-1] section 18.10) named set is displayed in a separate PivotTable ([ISO/IEC-29500-1] section 18.10) field.
"false"	"true"	All members from different levels of the same PivotTable ([ISO/IEC-29500-1] section 18.10) cache hierarchy of this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set are displayed in the same **PivotTable** ([ISO/IEC-29500-1] section 18.10) field.

measuresSet : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set contains one or more PivotTable ([ISO/IEC-29500-1] section 18.10) measure cache hierarchies. MUST be "false" if **ignore** is "true".

ignore	measureSet	Meaning
"true"	"false"	The ancestor **cacheHierarchy** element of type **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) of this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set is discarded.
"false"	"false"	The **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set does not contain PivotTable ([ISO/IEC-29500-1] section 18.10) measure cache hierarchies.
"false"	"true"	The **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set contains PivotTable ([ISO/IEC-29500-1] section 18.10) measure cache hierarchies.

hierarchizeDistinct : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to automatically order and remove duplicates from this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set. MUST be "false" if **ignore** is "true". If a CT_CalculatedMember element that corresponds to the **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set exists, this attribute MUST be equal to **hierachizeDistinct** attribute of the CT_CalculatedMember element.

ignore	hierarchizeDistinct	Meaning
"true"	"false"	The ancestor **cacheHierarchy** element of type **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) of this PivotTable ([ISO/IEC-29500-1] section 18.10) named set is discarded.
"false"	"false"	Do not automatically order and remove duplicates from this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set.
"false"	"true"	Automatically order and remove duplicates from this **PivotTable** ([ISO/IEC-29500-1] section 18.10) named set.

ignore : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the ancestor **cacheHierarchy** element of type **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) SHOULD<9> be discarded. If **ignore** is "true", the ancestor **cacheHierarchy** element of type **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) MUST have the following attribute values:

Field	Value
measure	"true"
set	"false"
attribute	"false"
measures	"false"
oneField	"false"
time	"false"
keyAttribute	"false"
memberValueDatatype	MUST NOT be specified.
unbalanced	MUST NOT be specified.
unbalancedGroup	MUST NOT be specified.
hidden	"false"
count	"0"
parentSet	MUST NOT be specified.
dimensionUniqueName	MUST NOT be specified.
defaultMemberUniqueName	MUST NOT be specified.
allUniqueName	MUST NOT be specified.
allCaption	MUST NOT be specified.
displayFolder	MUST NOT be specified.
measureGroup	MUST NOT be specified.
uniqueName	"Dummy*N*", where *N* is the text string representing in decimal form the zero-based index of the ancestor **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) element within the group of **CT_CacheHierarchy**

Field	Value
	([ISO/IEC-29500-4] section A.2) elements that have a descendent CT_CacheHierarchy element with the **ignore** attribute equal to "true".

Within the **CT_CacheHierarchies** ([ISO/IEC-29500-4] section A.2) element, all **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) elements that have a descendant CT_CacheHierarchy element with the **ignore** attribute equal to "true" MUST follow all other **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) elements without a descendent CT_CacheHierarchy element or with a descendent CT_CacheHierarchy element with the **ignore** attribute equal to "false".

If this attribute is "true", there MUST exist a **CT_DataField** ([ISO/IEC-29500-4] section A.2) element with a **fld** attribute equal to the zero-based index of a **CT_CacheField** ([ISO/IEC-29500-4] section A.2) element in the list of **CT_CacheField** ([ISO/IEC-29500-4] section A.2) elements specified by **CT_CacheFields** ([ISO/IEC-29500-4] section A.2) with a **hierarchy** attribute that specifies the ancestor **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2). Additionally, that **CT_DataField** ([ISO/IEC-29500-4] section A.2) element MUST have a descendant CT_DataField element with a **sourceField** attribute specified.

For more details, see CT_DataField.

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

```
<xsd:complexType name="CT_CacheHierarchy">
  <xsd:sequence>
    <xsd:element name="setLevels" minOccurs="0" maxOccurs="1" type="CT_SetLevels"/>
  </xsd:sequence>
  <xsd:attribute name="flattenHierarchies" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="measuresSet" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="hierarchizeDistinct" type="xsd:boolean" use="optional"
default="true"/>
  <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.25 CT_DataField

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: dataField

This complex type specifies extended information about a **PivotTable** ([ISO/IEC-29500-1] section 18.10) data field item ([ISO/IEC-29500-1] section 18.10.1.22).

Attributes:

pivotShowAs : An ST_PivotShowAs attribute that specifies the data display format for this **PivotTable** ([ISO/IEC-29500-1] section 18.10) data field item. If this attribute is specified, the **showDataAs** attribute of the ancestor **CT_Datafield** ([ISO/IEC-29500-4] section A.2) element MUST NOT be specified. If this attribute is equal to "percentOfParent", "percentOfRunningTotal", "rankAscending", or "rankDescending", the **baseField** attribute of the ancestor **CT_Datafield** ([ISO/IEC-29500-4] section A.2) element MUST be greater than or equal to 0.

sourceField : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the zero-based index of the **CT_PivotField** ([ISO/IEC-29500-4] section A.2) element in the list of **CT_PivotField** ([ISO/IEC-29500-4] section A.2) elements specified by the **CT_PivotFields** ([ISO/IEC-29500-4] section A.2) element that this data item summarizes.

If an OLAP measure is summarized in a PivotTable ([ISO/IEC-29500-1] section 18.10) as a data field item ([ISO/IEC-29500-1] section 18.10.1.22) more than one time, data field items ([ISO/IEC-29500-1] section 18.10.1.22) that specify that OLAP measure after the first data field item ([ISO/IEC-29500-1] section 18.10.1.22) that specifies that OLAP measure MUST have a descendant **CT_DataField** element with a **sourceField** specified.

If this attribute is specified, the **CT_PivotField** ([ISO/IEC-29500-4] section A.2) element specified by the **fld** attribute of the ancestor **CT_Datafield** ([ISO/IEC-29500-4] section A.2) element MUST have a descendant CT_PivotField element with an **ignore** attribute equal to "true".

If this attribute is specified, the **CT_CacheField** ([ISO/IEC-29500-4] section A.2) element with a zero-based index in the list of **CT_CacheField** ([ISO/IEC-29500-4] section A.2) elements specified by the **CT_CacheFields** ([ISO/IEC-29500-4] section A.2) element equal to the **fld** attribute of the ancestor **CT_Datafield** ([ISO/IEC-29500-4] section A.2) element that exists in the Pivot Table Cache Definition part ([ISO/IEC-29500-1] section 12.3.12) specified by the **cacheId** attribute of the **CT_PivotTableDefinition** ([ISO/IEC-29500-4] section A.2) element that is the ancestor of this element MUST have a descendant CT_CacheField element. The **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) element specified by the **hierarchy** attribute of that **CT_CacheField** ([ISO/IEC-29500-4] section A.2) element MUST have a descendent CT_CacheHierarchy element with an **ignore** attribute equal to "true". The **CT_PivotHierarchy** ([ISO/IEC-29500-4] section A.2) element with a zero-based index in the list of **CT_PivotHierarchy** ([ISO/IEC-29500-4] section A.2) elements specified by the **CT_PivotHierarchies** ([ISO/IEC-29500-4] section A.2) element in this part that is equal to the zero-based index of that **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) element in the list of **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) elements specified by the **CT_CacheHierarchies** ([ISO/IEC-29500-4] section A.2) element MUST have a descendant CT_PivotHierarchy element.

If this attribute is specified, the **fld** attribute of the ancestor **CT_Datafield** ([ISO/IEC-29500-4] section A.2) element SHOULD<10> be ignored.

This attribute MUST NOT be specified for non-OLAP PivotTables ([ISO/IEC-29500-1] section 18.10).

uniqueName : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the unique name for duplicated OLAP measures. MUST be unique within this part. MUST be less than or equal to 65,535 characters in length.

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

```
<xsd:complexType name="CT_DataField">
  <xsd:attribute name="pivotShowAs" type="ST_PivotShowAs" use="optional"/>
  <xsd:attribute name="sourceField" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="uniqueName" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.26 CT_Cfvo

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_ColorScale, CT_DataBar, CT_IconSet

This complex type specifies a Conditional Formatting Value Object (CFVO) that specifies how to calculate a value from the range of cells to which a conditional formatting rule applies.

Child Elements:

xm:f : An f element that specifies the formula that is evaluated and compared to the **cell value** by the comparison method specified by **gte**. The formula MUST adhere to the grammar provided in Formulas, with the following restrictions:

- MUST NOT use the ref-infix-operator, book-prefix, local-cell-reference, bang-reference, bang-name, array-constant, sheet-range-reference or structure-reference production rules.
- MUST NOT use the A1-relative-column production rule except from the A1-absolute-column production rule, and it MUST NOT use the A1-relative-row production rule except from the A1-absolute-row production rule.
- MUST NOT match the single-sheet-area production rule.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

type : An ST_CfvoType attribute that specifies how the CFVO value is determined:

- If this CT_Cfvo element is a child of a CT_ColorScale and specifies the beginning of the **color scale**, this attribute MUST NOT be max.
- If this CT_Cfvo element is a child of a CT_ColorScale and specifies the end of the color scale, this attribute MUST NOT be min.
- If this CT_Cfvo element is a child of a CT_ColorScale and specifies the midpoint of the color scale, this attribute MUST NOT be max and MUST NOT be min.
- If this CT_Cfvo element is a child of a CT_DataBar and specifies the cell value for the min length of the **data bar**, this attribute MUST NOT be max or autoMax.
- If this CT_Cfvo element is a child of a CT_DataBar and specifies the cell value for the max length of the data bar, this attribute MUST NOT be min or autoMin.
- If this CT_Cfvo element is not a child of a CT_DataBar, this attribute MUST NOT be autoMin and MUST NOT be autoMax.
- If this CT_Cfvo element is a child of a CT_IconSet record, this value MUST NOT be max or min.
- If the value is max, min, autoMax, or autoMin, **f** MUST NOT be present.

gte : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the CT_Cfvo will use greater-than or greater-than-or-equal-to when applying conditional formatting rules. If this CT_Cfvo element is a child of something other than a CT_IconSet element, this attribute MUST not be present. The value of this attribute is interpreted as follows:

Value	Meaning
"false"	Greater-than is used when applying conditional formatting rules.

Value	Meaning
"true"	Greater-than-or-equal-to is used when applying conditional formatting rules.

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

```
<xsd:complexType name="CT_Cfvo">
  <xsd:sequence>
    <xsd:element ref="xm:f" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="ST_CfvoType" use="required"/>
  <xsd:attribute name="gte" type="xsd:boolean" use="optional" default="true"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.27 CT_CfRule

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_ConditionalFormatting

This complex type specifies a conditional formatting rule for a range.

Child Elements:

xm:f : f elements that specify the formulas in the conditional formatting rule. The formulas MUST adhere to the grammar specified in Formulas, with the following restrictions:

- The formula MUST NOT conform to the ref-infix-operator, book-prefix, local-cell-reference, array-constant, bang-reference, bang-name, sheet-range-reference, or structure-reference production rules.
- The formula MUST NOT match the single-sheet-area production rule.

The following table explains how to interpret the formulas.

Value of type	Interpretation of the formulas in f
cellIs	f elements that specify the formulas, numeric values, or cell references that specify the operands for the **ST_ConditionalFormattingOperator** ([ISO/IEC-29500-1] section 18.18.15) specified by **operator**. If **operator** is "between" or "notBetween", **f** MUST contain two formulas; otherwise, **f** MUST contain one formula.
expression	An f element that specifies a formula. When the formula returns zero, conditional formatting is not displayed. When the formula returns a nonzero value, conditional formatting is displayed.
colorScale, dataBar, iconSet	An f element that specifies a formula. When the formula returns zero, conditional formatting is not displayed. When the formula returns a nonzero value, or is not present, conditional formatting is displayed.
containsText, notContainsText,	An f element that specifies a formula that implements the operation specified by **type**. When the formula returns zero, conditional formatting is not displayed.

Value of type	Interpretation of the formulas in f
beginsWith, endsWith, containsBlanks, notContainsBlanks, containsErrors, notContainsErrors	When the formula returns a nonzero value, conditional formatting is displayed.

colorScale : A CT_ColorScale element that specifies a color scale.

dataBar : A CT_DataBar element that specifies a data bar.

iconSet : A CT_IconSet element that specifies an **icon set**.

dxf : A **CT_Dxf** ([ISO/IEC-29500-4] section A.2) element that specifies the differential formatting ([ISO/IEC-29500-1] section M.2.7.3.8) applied to the range. If **type** is "colorScale", "dataBar", or "iconSet", or the **priority** attribute does not exist, this element MUST NOT exist.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

type : An **ST_CfType** ([ISO/IEC-29500-1] section 18.18.12) attribute that specifies the way conditional formatting is displayed in the range.

If and only if **type** is "colorScale", a **colorScale** child element MUST exist in this element.

If and only if **type** is "dataBar", a **dataBar** child element MUST exist in this element.

If and only if **type** is "iconSet", an **iconSet** child element MUST exist in this element.

priority : An **int** ([XMLSCHEMA2] section 3.3.17) attribute that specifies the relative priority of this rule compared to the other rules in this sheet, or whether this CT_CfRule specifies extension information for a conditional formatting data bar rule as specified by the associated **CT_CfRule** ([ISO/IEC-29500-4] section A.2) element. MUST be greater than 0.

If **priority** exists, rules are applied in order from the smallest **priority** to the largest **priority** and it MUST NOT duplicate a **priority** value in any other CT_CfRule or **CT_CfRule** ([ISO/IEC-29500-4] section A.2) element that exists in the same worksheet part.

If **priority** does not exist, this CT_CfRule specifies extension information for a conditional formatting data bar rule, and the **dataBar** child element MUST exist and describe this additional information. The **id** attribute is used to identify the associated **CT_CfRule** ([ISO/IEC-29500-4] section A.2), and the **priority** attribute of this **CT_CfRule** ([ISO/IEC-29500-4] section A.2) specifies the relative priority of this rule. If neither the **priority** attribute nor the **id** attribute exists in this element, or if **id** exists but there exists no **CT_CfRule** ([ISO/IEC-29500-4] section A.2) element containing a matching **GUID**, this record and the succeeding **dataBar** child element MUST be ignored. If the **priority** attribute exists in this element, **id** MUST be ignored.

stopIfTrue : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether evaluation of additional conditional formatting rules is skipped for a cell if this rule evaluates to "true" for that cell.

aboveAverage : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the conditional formatting rule is applied to cells with values above or below the average value of other cells in the range as specified by the following table. This attribute MUST NOT exist if **type** is not equal to "aboveAverage".

Value	Meaning
"true"	The conditional formatting rule is applied to cells with values above the average value of all cells in the range.
"false"	The conditional formatting rule is applied to cells with values below the average value of all cells in the range.

percent : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the conditional formatting rule is applied to a percentage of cells as specified by the following table. This attribute MUST NOT exist if **type** is not equal to "top10".

Value	Meaning
"true"	**rank** specifies the percentage of cells in the range to which conditional formatting is applied.
"false"	The conditional formatting rule is applied to the number of cells specified by **rank**.

bottom : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies how the conditional formatting rule is applied as specified by the following table. This attribute MUST NOT exist if **type** is not equal to "top10".

Value	Meaning
"true"	Conditional formatting is applied to cells whose value is in the bottom end of the range specified by **percent** and **rank**.
"false"	Conditional formatting is applied to cells whose value is in the top end of the range specified by **percent** and **rank**.

operator : An **ST_ConditionalFormattingOperator** ([ISO/IEC-29500-1] section 18.18.15) attribute that specifies the type of value comparison used for this conditional formatting rule. This attribute MUST NOT exist if **type** is not equal to "cellIs".

text : A **string** ([XMLSCHEMA2] section 3.2.1) attribute that specifies a text value used for this conditional formatting rule. This attribute MUST NOT exist if type is not equal to "beginsWith", "containsText", "endsWith", or "notContainsText".

timePeriod : An **ST_TimePeriod** ([ISO/IEC-29500-1] section 18.18.82) attribute that specifies the time period used for this conditional formatting rule. This attribute MUST NOT exist if **type** is not equal to "timePeriod".

rank : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies how many cells are formatted by this conditional formatting rule. The value of **percent** specifies whether **rank** is a percentage or a quantity of cells. When **percent** is "true", **rank** MUST be greater than or equal to zero and less than or equal to 100. Otherwise, **rank** MUST be greater than or equal to 1 and less than or equal to 1,000. This attribute MUST NOT exist if **type** is not equal to "top10".

stdDev : An **int** ([XMLSCHEMA2] section 3.3.17) attribute that specifies the number of standard deviations above or below the average to format in the conditional formatting rule. This attribute MUST NOT exist if **type** is not equal to "aboveAverage" or if **equalAverage** is "true".

equalAverage : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies, together with **aboveAverage**, how the conditional formatting rule is applied as specified by the following table. This attribute MUST NOT exist if **type** is not equal to "aboveAverage".

Value of equalAverage	Value of aboveAverage	Meaning
"true"	"true"	Conditional formatting is applied to cells whose value is equal to or above the average value of cells in the range.
"true"	"false"	Conditional formatting is applied to cells whose value is equal to or below the average value of cells in the range.
"false"	"true"	Conditional formatting is applied to cells whose value is above the average value of all cells in the range plus **stdDev** and multiplied by the standard deviation of all cells in the range.
"false"	"false"	Conditional formatting is applied to cells whose value is below the average value of all cells in the range minus **stdDev** and multiplied by the standard deviation of all cells in the range.

activePresent : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that MUST be "true" if, and only if, a formula is present in **f** and **type** is "colorScale", "dataBar", or "iconSet".

id : An **ST_Guid** ([ISO/IEC-29500-1] section 22.9.2.4) attribute that identifies this conditional formatting rule. If the **priority** attribute does not exist, and this attribute exists, this attribute is used to match this CT_CfRule element to the corresponding **CT_CfRule** ([ISO/IEC-29500-4] section A.2) element. If neither the **priority** attribute nor this attribute exists, this CT_CfRule and its child CT_DataBar element MUST be ignored.

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

```
<xsd:complexType name="CT_CfRule">
  <xsd:sequence>
    <xsd:element ref="xm:f" minOccurs="0" maxOccurs="3"/>
    <xsd:element name="colorScale" type="CT_ColorScale" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="dataBar" type="CT_DataBar" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="iconSet" type="CT_IconSet" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="dxf" type="x:CT_Dxf" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="x:ST_CfType" use="optional"/>
  <xsd:attribute name="priority" type="xsd:int" use="optional"/>
  <xsd:attribute name="stopIfTrue" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="aboveAverage" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="percent" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="bottom" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="operator" type="x:ST_ConditionalFormattingOperator" use="optional"/>
  <xsd:attribute name="text" type="xsd:string" use="optional"/>
  <xsd:attribute name="timePeriod" type="x:ST_TimePeriod" use="optional"/>
  <xsd:attribute name="rank" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="stdDev" type="xsd:int" use="optional"/>
  <xsd:attribute name="equalAverage" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="activePresent" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="id" type="x:ST_Guid" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.28 CT_IconSet

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_CfRule

A complex type that specifies the properties of a conditional formatting rule that uses an icon set. The first **cfvo** element following this element MUST be ignored. There MUST be greater than or equal to three **cfvo** elements and MUST be less than or equal to five **cfvo** elements following this complex type.

Child Elements:

cfvo : A CT_Cfvo element that specifies a threshold value between each icon in the icon set.

cfIcon : A CT_CfIcon element that specifies a particular icon to use within an icon set. This element MUST be present if and only if **custom** equals "true".

Attributes:

iconSet : An ST_IconSetType attribute that specifies the icon set used.

showValue : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the cells in the applied range display the icon and cell value, or the icon only.

Value	Meaning
"true"	The icon and cell value are shown in the cell.
"false"	Only the icon is shown in the cell.

percent : Undefined and MUST be ignored.

reverse : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the icons in the icon set specified in **iconSet** are shown in reverse order. If **custom** equals "true" this value MUST be ignored.

Value	Meaning
"true"	The icons specified in **iconSet** are shown in reverse order.
"false"	The icons specified in **iconSet** are shown in the order defined by the icon set.

custom : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether a custom set of icons is used. If this value is "true", there MUST be the same number of **cfIcon** elements as **cfvo** elements and the icons specified by the **cfIcon** elements are used rather than those specified by **iconSet**. If this value is "false", there MUST be 0 **cfIcon** elements.

Value	Meaning
"false"	No custom set of icons is used.
"true"	A custom set of icons is used.

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

```
<xsd:complexType name="CT_IconSet">
  <xsd:sequence>
    <xsd:element name="cfvo" type="CT_Cfvo" minOccurs="2" maxOccurs="unbounded"/>
    <xsd:element name="cfIcon" type="CT_CfIcon" minOccurs="0" maxOccurs="5"/>
  </xsd:sequence>
  <xsd:attribute name="iconSet" type="ST_IconSetType" use="optional"
default="3TrafficLights1"/>
  <xsd:attribute name="showValue" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="percent" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="reverse" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="custom" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.29 CT_ColorScale

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_CfRule

A complex type that specifies a color scale used in conditional formatting.

Child Elements:

cfvo : A CT_Cfvo element that specifies the cell values corresponding to the interpolation colors of the color scale. The CT_ColorScale MUST have either two or three child CT_Cfvo elements.

If there are two child CT_Cfvo elements present, the first child CT_Cfvo element specifies the cell value corresponding to the beginning color of the color scale. The second child CT_Cfvo element specifies the cell value corresponding to the end color of the color scale.

If there are three child CT_Cfvo elements present, the first child CT_Cfvo element specifies the cell value corresponding to the beginning color of the color scale. The second child CT_Cfvo element specifies the cell value corresponding to the midpoint color of the color scale. The third child CT_Cfvo element specifies the cell value corresponding to the end color of the color scale.

color : A **CT_Color** ([ISO/IEC-29500-4] section A.2) element that specifies the interpolation colors of the color scale for the **cfvo** element at the same corresponding position. The **CT_ColorScale** MUST have either two or three child **CT_Color** ([ISO/IEC-29500-4] section A.2) elements, and the number of child elements MUST equal the number of CT_Cfvo child elements.

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

```
<xsd:complexType name="CT_ColorScale">
  <xsd:sequence>
    <xsd:element name="cfvo" type="CT_Cfvo" minOccurs="2" maxOccurs="unbounded"/>
    <xsd:element name="color" type="x:CT_Color" minOccurs="2" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.30 CT_DataBar

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_CfRule

A complex type that specifies a data bar used in conditional formatting.

Child Elements:

cfvo : A **CT_Cfvo** element (section 2.6.26) that specifies the cell values corresponding to the min/max length of the data bar. If there exist **CT_Cfvo** ([ISO/IEC-29500-4] section A.2) elements in this sheet that are child elements of a **CT_DataBar** ([ISO/IEC-29500-4] section A.2) element that is a child of a **CT_CfRule** ([ISO/IEC-29500-4] section A.2) element that is a parent of a **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element with a child **CT_Extension** ([ISO/IEC-29500-4] section A.2) element that has a child **ST_Guid** ([ISO/IEC-29500-4] section A.2) element equal to the **id** attribute of this complex type's parent **CT_CfRule** element (section 2.6.27), those **CT_Cfvo** elements SHOULD<11> be ignored. The first child **CT_Cfvo** element specifies the condition corresponding to the min length of the data bar. The second child **CT_Cfvo** element specifies the condition corresponding to the max length of the data bar.

fillColor : A **CT_Color** ([ISO/IEC-29500-4] section A.2) element that specifies the fill color of the data bar. This element MUST exist if and only if the **priority** attribute of the **CT_CfRule** that is a parent of this complex type exists.

borderColor : A **CT_Color** element that specifies the border color of the data bar. This element MUST exist if and only if **border** equals "true".

negativeFillColor : A **CT_Color** element that specifies the negative fill color of the data bar. This element MUST exist if and only if **negativeBarColorSameAsPositive** equals "false".

negativeBorderColor : A **CT_Color** element that specifies the negative border color of the data bar. This element MUST exist if and only if **negativeBarBorderColorSameAsPositive** equals "false" and **border** equals "true".

axisColor : A **CT_Color** element that specifies the axis color of the data bar. This element MUST exist if and only if **axisPosition** does not equal "none".

Attributes:

minLength : An **unsignedIn**t ([XMLSCHEMA2] section 3.3.22) attribute that specifies the length of the shortest data bar in this conditional formatting range, expressed as a percentage of the width of the cell containing the data bar. MUST be greater than or equal to zero and less than or equal to **maxLength**. If, in this same worksheet part, there exists a **CT_ExtensionList** element that is a descendent of a **CT_CfRule** with a child **CT_Extension** element with the child **ST_Guid** element equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element, and the **minLength** attribute of this element is zero ("0") and the **maxLength** attribute of this element is "100", the **minLength** attribute of the **CT_DataBar** element that is a descendent of the **CT_CfRule** element that is a parent of the **CT_ExtensionList** element that is a parent of the **CT_Extension** element with the child **ST_Guid** element equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element MUST be "10". If in this same worksheet part there exists an **CT_ExtensionList** element that is a descendent of a **CT_CfRule** with a child **CT_Extension** element with the child **ST_Guid** element equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element, and the **minLength** attribute of this element is not zero ("0") or the **maxLength** attribute of this element is not "100", the **minLength** attribute of the **CT_DataBar** element that is a descendent of the **CT_CfRule** element that is a parent of the **CT_ExtensionList** element that is a parent of the **CT_Extension** element with the child **ST_Guid** element that is

equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element MUST be equal to this complex type's **minLength**.

maxLength : An **unsignedInt** attribute that specifies the length of the longest data bar in this conditional formatting range, expressed as a percentage of the width of the cell being formatted. MUST be greater than or equal to **minLength** and less than or equal to 100. If in this same worksheet part there exists a **CT_ExtensionList** element that is a descendent of a **CT_CfRule** with a child **CT_Extension** element with the child **ST_Guid** element equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element, and the **minLength** attribute of this element is zero ("0") and the **maxLength** attribute of this element is "100", the **maxLength** attribute of the **CT_DataBar** element that is a descendent of the **CT_CfRule** element that is a parent of the **CT_ExtensionList** element that is a parent of the **CT_Extension** element with the child **ST_Guid** element that is equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element MUST be "90". If, in this same worksheet part, there exists a **CT_ExtensionList** element that is a descendent of a **CT_CfRule** with a child **CT_Extension** element with the child **ST_Guid** element equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element, and the **minLength** attribute of this element is not zero ("0") or the **maxLength** attribute of this element is not "100", the **maxLength** attribute of the **CT_DataBar** element that is a descendent of the **CT_CfRule** element that is a parent of the **CT_ExtensionList** element that is a parent of the **CT_Extension** element with the child **ST_Guid** element that is equal to the **id** attribute of the **CT_CfRule** element that is a parent of this element MUST be equal to this record's **maxLength**.

showValue : A **Boolean** attribute that specifies whether the cells in the conditional formatting range display both the data bar and the numeric value or only the data bar. The following table describes its possible values.

Value	Meaning
"false"	Only the data bar is displayed in the cell.
"true"	Both the data bar and the numeric value are displayed in the cell.

border : A **Boolean** attribute that specifies whether the data bar has a border.

gradient : A **Boolean** attribute that specifies whether the data bar has a gradient fill. The following table describes its possible values.

Value	Meaning
"false"	The data bar fill is a solid color.
"true"	The data bar fill is a gradient.

direction : An **ST_DataBarDirection** attribute section 2.7.7) that specifies the direction of the data bar.

negativeBarColorSameAsPositive : A **Boolean** attribute that specifies whether the data bar has a negative bar color that is different from the positive bar color.

negativeBarBorderColorSameAsPositive : A **Boolean** attribute that specifies whether the data bar has a negative border color that is different from the positive border color.

axisPosition : An **ST_DataBarAxisPosition** attribute (section 2.7.8) that specifies the axis position for the data bar.

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

```
<xsd:complexType name="CT_DataBar">
  <xsd:sequence>
    <xsd:element name="cfvo" type="CT_Cfvo" minOccurs="2" maxOccurs="2"/>
    <xsd:element name="fillColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="borderColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="negativeFillColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="negativeBorderColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="axisColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="minLength" type="xsd:unsignedInt" use="optional" default="10"/>
  <xsd:attribute name="maxLength" type="xsd:unsignedInt" use="optional" default="90"/>
  <xsd:attribute name="showValue" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="border" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="gradient" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="direction" type="ST_DataBarDirection" use="optional"
default="context"/>
  <xsd:attribute name="negativeBarColorSameAsPositive" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="negativeBarBorderColorSameAsPositive" type="xsd:boolean"
use="optional" default="true"/>
  <xsd:attribute name="axisPosition" type="ST_DataBarAxisPosition" use="optional"
default="automatic"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.31 CT_PivotField

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: pivotField

This complex type specifies additional properties of a PivotTable ([ISO/IEC-29500-1] section 18.10) field.

Attributes:

fillDownLabels : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the PivotTable ([ISO/IEC-29500-1] section 18.10) item labels are repeated for this **PivotTable** ([ISO/IEC-29500-1] section 18.10) field. This attribute is ignored when the **compact** attribute and the **outline** attribute of the **PivotTable** ([ISO/IEC-29500-1] section 18.10) field are "true". This attribute is ignored if the **PivotTable** ([ISO/IEC-29500-1] section 18.10) field is not on the PivotTable ([ISO/IEC-29500-1] section 18.10) row axis or the PivotTable ([ISO/IEC-29500-1] section 18.10) column axis. This value MUST be one of the following:

Value	Meaning
"false"	The item labels are not repeated.
"true"	The item labels are repeated for each nested item.

ignore : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether this **PivotTable** ([ISO/IEC-29500-1] section 18.10) field SHOULD<12> be ignored.

If this attribute is "true", the ancestor CT_PivotField ([ISO/IEC-29500-4] section A.2) MUST have only the following attributes specified, and these attributes MUST have the following values.

Name	Value
compact	"false"
dataField	"true"
defaultSubtotal	"false"
dragOff	"false"
dragToCol	"false"
dragToData	"false"
dragToPage	"false"
dragToRow	"false"
includeNewItemsInFilter	"true"
itemPageCount	"false"
outline	"false"
showAll	"false"
subtotalTop	"false"
topAutoShow	"false"

If this attribute is equal to "true", there MUST exist a **CT_Datafield** ([ISO/IEC-29500-4] section A.2) element with a **fld** attribute that specifies this PivotTable ([ISO/IEC-29500-1] section 18.10) field. Additionally, that **CT_DataField** ([ISO/IEC-29500-4] section A.2) element MUST have a descendant CT_DataField element with a **sourceField** attribute specified.

For more details, see CT_DataField.

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

```
<xsd:complexType name="CT_PivotField">
  <xsd:attribute name="fillDownLabels" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.32 CT_PivotTableDefinition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: pivotTableDefinition

This element specifies additional properties of a PivotTable ([ISO/IEC-29500-1] section 18.10) view.

Child Elements:

pivotEdits : A CT_PivotEdits element that specifies a collection of PivotTable What-if Analysis edits.

pivotChanges : A CT_PivotChanges element that specifies a collection of PivotTable What-if Analysis changes.

conditionalFormats : A CT_ConditionalFormats element that specifies a collection of conditional formats applied to the PivotTable ([ISO/IEC-29500-1] section 18.10) view.

Attributes:

fillDownLabelsDefault : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies the behavior of **PivotTable** ([ISO/IEC-29500-1] section 18.10) fields that are not a part of the PivotTable ([ISO/IEC-29500-1] section 18.10) view if they are later added to a PivotTable ([ISO/IEC-29500-1] section 18.10) view. MUST be a value from the following table.

Value	Meaning
"false"	Specifies that **PivotTable** ([ISO/IEC-29500-1] section 18.10) fields added to the PivotTable ([ISO/IEC-29500-1] section 18.10) view behave as if the **fillDownLabels** attribute of the CT_PivotField elements associated with those **PivotTable** ([ISO/IEC-29500-1] section 18.10) fields are set to "false".
"true"	Specifies that **PivotTable** ([ISO/IEC-29500-1] section 18.10) fields added to the PivotTable ([ISO/IEC-29500-1] section 18.10) view behave as if the **fillDownLabels** attribute of the CT_PivotField elements associated with those **PivotTable** ([ISO/IEC-29500-1] section 18.10) fields are set to "true".

visualTotalsForSets : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether hidden PivotTable ([ISO/IEC-29500-1] section 18.10) items will be included when calculating totals for **PivotTable** ([ISO/IEC-29500-1] section 18.10) named sets. MUST be a value from the following table.

Value	Meaning
"false"	Include hidden PivotTable ([ISO/IEC-29500-1] section 18.10) items in the set totals.
"true"	Do not include hidden PivotTable ([ISO/IEC-29500-1] section 18.10) items in the set totals.

calculatedMembersInFilters : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether PivotTable ([ISO/IEC-29500-1] section 18.10) OLAP-calculated members participate in PivotTable ([ISO/IEC-29500-1] section 18.10) manual filters and PivotTable ([ISO/IEC-29500-1] section 18.10) advanced filters.

Value	Meaning
"false"	PivotTable ([ISO/IEC-29500-1] section 18.10) OLAP-calculated members do not participate in PivotTable ([ISO/IEC-29500-1] section 18.10) manual filters and PivotTable ([ISO/IEC-29500-1] section 18.10) advanced filters.
"true"	PivotTable ([ISO/IEC-29500-1] section 18.10) OLAP-calculated members participate in PivotTable ([ISO/IEC-29500-1] section 18.10) manual filters and PivotTable ([ISO/IEC-29500-1] section 18.10) advanced filters as do other PivotTable ([ISO/IEC-29500-1] section 18.10) items.

altText : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the alternate text for the PivotTable ([ISO/IEC-29500-1] section 18.10) view. The string MUST be less than or equal to 2,000 characters in length.

altTextSummary : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the alternate text summary for the PivotTable ([ISO/IEC-29500-1] section 18.10) view. This string MUST be less than or equal to 2,000 characters in length.

enableEdit : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether PivotTable what-if analysis is enabled for the current PivotTable ([ISO/IEC-29500-1] section 18.10) view.

autoApply : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether PivotTable what-if analysis values are automatically allocated.

allocationMethod : An ST_AllocationMethod attribute that specifies the allocation method to use for PivotTable what-if analysis.

weightExpression : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the multidimensional expression (MDX) of the weight expression for weighted allocations of PivotTable what-if analysis values. This string MUST be less than or equal to 65,535 characters in length.

hideValuesRow : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the values row in the PivotTable ([ISO/IEC-29500-1] section 18.10) report is visible.

Value	Meaning
"false"	The values row in the PivotTable ([ISO/IEC-29500-1] section 18.10) report is visible.
"true"	The values row in the PivotTable ([ISO/IEC-29500-1] section 18.10) report is not visible.

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

```
<xsd:complexType name="CT_PivotTableDefinition">
  <xsd:sequence>
    <xsd:element name="pivotEdits" type="CT_PivotEdits" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="pivotChanges" type="CT_PivotChanges" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="conditionalFormats" type="CT_ConditionalFormats" minOccurs="0"/>
  </xsd:sequence>
  <xsd:attribute name="fillDownLabelsDefault" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="visualTotalsForSets" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="calculatedMembersInFilters" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="altText" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="altTextSummary" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="enableEdit" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="autoApply" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="allocationMethod" type="ST_AllocationMethod" use="optional"
default="equalAllocation"/>
  <xsd:attribute name="weightExpression" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="hideValuesRow" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.33 CT_PivotCacheDefinition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: pivotCacheDefinition

A complex type that specifies the extended properties of a PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache Definition.

Attributes:

slicerData : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies the Slicer Cache Relationship to PivotCache. MUST be "true" if the OLAP PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache Definition is being referenced by a slicer cache.

pivotCacheId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute which uniquely identifies this PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache. MUST be zero if there is no slicer cache that uses this PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache as a data source (1). MUST be greater than or equal to zero.

supportSubqueryNonVisual : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the OLAP source data of this PivotTable ([ISO/IEC-29500-1] section 18.10) supports hidden PivotTable items.

supportSubqueryCalcMem : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the OLAP source data of this PivotTable supports PivotTable calculated members in an **OLAP subselect** for filtering.

supportAddCalcMems : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether PivotTable ([ISO/IEC-29500-1] section 18.10) calculated members are shown for filtering.

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

```
<xsd:complexType name="CT_PivotCacheDefinition">
  <xsd:attribute name="slicerData" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="pivotCacheId" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="supportSubqueryNonVisual" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="supportSubqueryCalcMem" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="supportAddCalcMems" type="xsd:boolean" use="optional"
default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.34 CT_Connection

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: connection

A complex type that specifies the extended properties of an external connection ([ISO/IEC-29500-1] section 18.13).

Child Elements:

calculatedMembers : A **CT_CalculatedMembers** ([ISO/IEC-29500-4] section A.2) element that specifies a list of PivotTable ([ISO/IEC-29500-1] section 18.10) OLAP-calculated members associated with this external connection ([ISO/IEC-29500-1] section 18.13). If this external connection ([ISO/IEC-29500-1] section 18.13) is associated with a PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache, the list MUST NOT exist. If this element exists, the ancestor **CT_connection** ([ISO/IEC-29500-4] section A.2) element of this element MUST have a child **CT_OlapPr** ([ISO/IEC-29500-1] section 18.13.5) element.

Attributes:

culture : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the language associated with this external connection ([ISO/IEC-29500-1] section 18.13). The length of this string MUST be less than 85 characters. If the length of this string is greater than 0, the contents of this string MUST<13> be a language tag as specified by [RFC3066]. If this attribute is not present, the data connection is using the server language.

embeddedDataId : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies an embedded Custom Data part. The length of this value MUST be less than 65,536 characters. If the length of this string is greater than 0, the contents of this string MUST be equal to the **id** attribute of a CT_DatastoreItem element, in a Custom Data Properties part in this package ([ISO/IEC-29500-1] section 9).

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

```
<xsd:complexType name="CT_Connection">
  <xsd:sequence>
    <xsd:element name="calculatedMembers" type="x:CT_CalculatedMembers" minOccurs="0"
maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="culture" use="optional" type="x:ST_Xstring"/>
  <xsd:attribute name="embeddedDataId" use="optional" type="x:ST_Xstring"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.35 CT_Table

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: table

A complex type that specifies alternate text properties for the table.

Attributes:

altText : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the alternate text for the table. The string MUST be less than or equal to 25,000 characters in length.

altTextSummary : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the alternate text summary for the table. The string MUST be less than or equal to 50,000 characters in length.

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

```
<xsd:complexType name="CT_Table">
  <xsd:attribute name="altText" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="altTextSummary" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.36 CT_CfIcon

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_IconSet

A complex type that specifies a single icon of an icon set.

Attributes:

iconSet : An ST_IconSetType attribute that specifies the icon set.

iconId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the icon to be used. If the icon set specified by **iconSet** has three icons, this value MUST be less than or equal to 2. If the icon set specified by **iconSet** has four icons, this value MUST be less than or equal to 3. If the icon set specified by **iconSet** has five icons, this value MUST be less than or equal to 4. If **iconSet** equals "NoIcons" this value MUST be 0.

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

```
<xsd:complexType name="CT_CfIcon">
  <xsd:attribute name="iconSet" type="ST_IconSetType" use="required"/>
  <xsd:attribute name="iconId" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.37 CT_PivotEdits

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotTableDefinition

A complex type that specifies user inputs related to PivotTable what-if analysis in single cells of the PivotTable ([ISO/IEC-29500-1] section 18.10) data area. It also specifies the collections of MDX unique names that identify the values in the OLAP data source (1), and specifies the PivotTable ([ISO/IEC-29500-1] section 18.10) rules that can be used to identify the cells in the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

Child Elements:

pivotEdit : A CT_PivotEdit element that specifies user input, related to PivotTable what-if analysis, in a single cell of the PivotTable ([ISO/IEC-29500-1] section 18.10) data area, and specifies the collection of MDX unique names that identifies the value in the OLAP data source (1), and specifies a PivotTable ([ISO/IEC-29500-1] section 18.10) rule that can be used to identify the cell in the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

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

```
<xsd:complexType name="CT_PivotEdits">
  <xsd:sequence>
    <xsd:element name="pivotEdit" minOccurs="1" maxOccurs="unbounded" type="CT_PivotEdit"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.38 CT_PivotEdit

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotEdits

A complex type that specifies user input, related to PivotTable what-if analysis, in a single cell of the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

Child Elements:

userEdit : A CT_PivotUserEdit element that specifies the user input value or formula that replaces the original cell value, in a single cell of the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

tupleItems : A CT_TupleItems element that specifies the MDX unique names that identify the value in the OLAP data source (1) that was changed using PivotTable what-if analysis.

pivotArea : A **CT_PivotArea** ([ISO/IEC-29500-4] section A.2) element that specifies a PivotTable ([ISO/IEC-29500-1] section 18.10) rule that can be used to identify the cell in the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) that specifies future extensibility for this element.

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

```
<xsd:complexType name="CT_PivotEdit">
  <xsd:sequence>
    <xsd:element name="userEdit" type="CT_PivotUserEdit" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="tupleItems" type="CT_TupleItems" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="pivotArea" type="x:CT_PivotArea" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.39 CT_PivotChanges

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotTableDefinition

A complex type that specifies the values used for PivotTable what-if analysis calculations and specifies the allocation methods for how to apply the values. It also specifies the collections of MDX unique names that identify the original values in the OLAP data source (1) that were changed.

Child Elements:

pivotChange : A CT_PivotChange element that specifies the value used for PivotTable what-if analysis calculation and specifies the allocation method for how to apply the value. It also specifies a collection of MDX unique names that identifies the original value in the OLAP data source (1) that was changed.

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

```
<xsd:complexType name="CT_PivotChanges">
  <xsd:sequence>
    <xsd:element name="pivotChange" minOccurs="1" maxOccurs="unbounded"
type="CT_PivotChange"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.40 CT_PivotChange

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotChanges

A complex type that specifies the value used for PivotTable what-if analysis calculation and specifies the allocation method for how to apply the value. It also specifies a collection of MDX unique names that identifies the original value in the OLAP data source (1) that was changed.

Child Elements:

editValue : A CT_PivotEditValue element that specifies the value that replaces the original value in the OLAP data source (1) for the PivotTable what-if analysis.

tupleItems : A CT_TupleItems element that specifies the MDX unique names that identify the value in the OLAP data source (1) that was changed using PivotTable what-if analysis.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) that specifies future extensibility for this element.

Attributes:

allocationMethod : An ST_AllocationMethod attribute that specifies the allocation method, used by PivotTable what-if analysis, to change the value in the OLAP data source (1).

weightExpression : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the **OLAP weight expression** for PivotTable what-if analysis. The **weightExpression** MUST NOT exist if **allocationMethod** equals equalAllocation or equals equalIncrement. The **weightExpression** MUST be greater than or equal to 0 and less than or equal to 65,535 characters in length.

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

```
<xsd:complexType name="CT_PivotChange">
  <xsd:sequence>
    <xsd:element name="editValue" type="CT_PivotEditValue" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="tupleItems" type="CT_TupleItems" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="allocationMethod" type="ST_AllocationMethod"
default="equalAllocation"/>
  <xsd:attribute name="weightExpression" type="x:ST_Xstring" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.41 CT_PivotUserEdit

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotEdit

A complex type that specifies user input, related to PivotTable what-if analysis, in a single cell of the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

Child Elements:

xm:f : An f element that specifies a formula. The formula MUST adhere to the grammar provided in Formulas, with the following restriction: The **formula** MUST NOT use the bang-reference or bang-name production rules.

editValue : A CT_PivotEditValue element that specifies the user input value that replaces the original cell value, in a single cell of the PivotTable ([ISO/IEC-29500-1] section 18.10) data area.

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

```
<xsd:complexType name="CT_PivotUserEdit">
  <xsd:choice minOccurs="1" maxOccurs="1">
    <xsd:element ref="xm:f" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="editValue" type="CT_PivotEditValue" minOccurs="1" maxOccurs="1"/>
  </xsd:choice>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.42 CT_PivotEditValue

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotUserEdit, CT_PivotChange

A complex type that specifies the value type of the user input in the single cell of the PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, data area, or value type of the value that replaces the original value in the OLAP data source (1) for PivotTable what-if analysis, as specified in section 2.3.1.

Attributes:

valueType : An ST_PivotEditValueType attribute, as specified in section 2.7.11, that specifies the type of the value of the user input or the type of the value that replaces the original value in the OLAP data source (1). MUST NOT be equal to "deleted".

The length of the string MUST be greater than zero and MUST be less than 32,768 characters.

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

```
<xsd:complexType name="CT_PivotEditValue">
  <xsd:simpleContent>
    <xsd:extension base="x:ST_Xstring">
      <xsd:attribute name="valueType" use="required" type="ST_PivotEditValueType"/>
    </xsd:extension>
  </xsd:simpleContent>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.43 CT_TupleItems

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotEdit, CT_PivotChange

A complex type that specifies the MDX unique names that identify the value in the OLAP data source (1) using PivotTable what-if analysis, as specified in section 2.3.1.

Child Elements:

tupleItem : An **ST_Xstring** element, as specified in [ISO/IEC-29500-1] section 22.9.2.19, that specifies an MDX unique name. The number of these elements MUST be greater than zero and MUST be less than 2^31. The length of each **ST_Xstring** MUST be greater than zero and MUST be less than or equal to 65,535 characters.

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

```
<xsd:complexType name="CT_TupleItems">
  <xsd:sequence>
    <xsd:element name="tupleItem" type="x:ST_Xstring" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.44 CT_SlicerStyle

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerStyles

CT_SlicerStyle specifies table style elements, as specified in [ISO/IEC-29500-1] section 18.8, of the slicer style, as specified in section 2.3.2.4, that are specific to slicers, as specified in section 2.3.2.

Child Elements:

slicerStyleElements : A **CT_SlicerStyleElements**, as specified in section 2.6.52, that specifies table style elements of the slicer style that are specific to slicers. There MUST NOT be more than one **CT_SlicerStyleElements** in this element.

Attributes:

name : A **string** attribute, as specified in [XMLSCHEMA2] section 3.2.1, that specifies the name of the user-defined table style that this slicer style is based upon. The length of the **string** MUST be greater than or equal to 1 character and less than or equal to 255 characters. This **string** MUST be unique within the **CT SlicerStyle** elements in the **Styles** part, as specified in [ISO/IEC-29500-1] section 12.3.20. This **string** MUST match the **name** attribute of a **CT_TableStyle** element, as specified in [ISO/IEC-29500-4] section A.2, in the **Styles** part. In the **CT_TableStyle** element with a **name** attribute that matches this **string**, the **pivot** attribute MUST equal "false" and the **table** attribute MUST equal "false".

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

```
<xsd:complexType name="CT_SlicerStyle">
  <xsd:sequence>
    <xsd:element name="slicerStyleElements" type="CT_SlicerStyleElements" minOccurs="0"
maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.45 CT_SlicerStyleElement

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerStyleElements

A complex type that specifies a table style element, as specified in [ISO/IEC-29500-1] section 18.8, of a slicer style, as specified in section 2.3.2.4.

Attributes:

type : An **ST_SlicerStyleType** attribute, as specified in section 2.7.13, that specifies the type of the table style element. This attribute MUST be unique within the parent **CT_SlicerStyleElements** complex type.

dxfId : An **ST_DxfId** attribute, as specified in [ISO/IEC-29500-1] section 18.18.25, that specifies a zero-based index for the list of elements specified by the **dxfs** global element, as specified in section 2.4.22. The specified **CT_Dxf** complex type, as specified in [ISO/IEC-29500-4] section A.2, specifies the formatting to use with this table style element.

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

```
<xsd:complexType name="CT_SlicerStyleElement">
  <xsd:attribute name="type" type="ST_SlicerStyleType" use="required"/>
  <xsd:attribute name="dxfId" type="x:ST_DxfId" use="optional"/>
```

```
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.46 CT_OleItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: oleItem

OleItem is a complex type that specifies an OLE data item, as specified in [ISO/IEC-29500-1] section 18.14, with associated cached values.

Child Elements:

values : A **CT_DdeValues** element, as specified in [ISO/IEC-29500-4] section A.2, that specifies the cached values.

Attributes:

name : An **ST_Xstring** attribute, as specified in [ISO/IEC-29500-1] section 22.9.2.19, that specifies the name of the OLE data item.

icon : A **Boolean** attribute, as specified in [XMLSCHEMA2] section 3.2.2, that specifies whether the OLE data item is represented as an icon.

Value	Meaning
"false"	The OLE data item is not represented as an icon.
"true"	The OLE data item is represented as an icon.

advise : A **Boolean** attribute that specifies whether the application requests that the **OLE** data source (1), as specified in [ISO/IEC-29500-1] section 18.14, provides notifications when the source data changes.

Value	Meaning
"false"	The application does not request to be notified when the source data changes.
"true"	The application requests to be notified when the source data changes.

preferPic : A **Boolean** attribute that specifies whether the OLE data item is an image.

Value	Meaning
"false"	The OLE data item is not an image.
"true"	The OLE data item is an image.

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

```
<xsd:complexType name="CT_OleItem">
  <xsd:sequence>
```

```
      <xsd:element name="values" type="x:CT_DdeValues" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
    <xsd:attribute name="icon" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="advise" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="preferPic" type="xsd:boolean" use="optional" default="false"/>
  </xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.47 CT_PivotHierarchy

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: pivotHierarchy

A complex type that specifies whether the ancestor **CT_PivotHierarchy** element, as specified in [ISO/IEC-29500-4] section A.2, SHOULD<14> be ignored.

The ancestor **CT_PivotHierarchy** element has the following restrictions on attributes.

Name	Value
caption	MUST NOT be specified.
dragOff	MUST equal "false".
dragToCol	MUST equal "false".
dragToData	MUST equal "true".
dragToPage	MUST equal "false".
dragToRow	MUST equal "false".
includeNewItemsInFilter	MUST equal "true".
multipleItemSelectionAllowed	MUST NOT be specified.
outline	MUST NOT be specified.
showInFieldList	MUST NOT be specified.
subtotalTop	MUST NOT be specified.

The ancestor **CT_PivotHierarchy** element has the following restrictions on child elements.

Child element	Restriction
CT_PivotHierarchy (this element)	Exactly 1 MUST exist.
CT_Members ([ISO/IEC-29500-4] section A.2)	MUST NOT exist.
CT_MemberProperties ([ISO/IEC-29500-4] section A.2)	MUST NOT exist.

If this element exists, there MUST exist a **CT_DataField** element, as specified in [ISO/IEC-29500-4] section A.2, with a **fld** attribute equal to the zero-based index of a **CT_CacheField** element, as

specified in [ISO/IEC-29500-4] section A.2, in the list of **CT_CacheField** elements specified by **CT_CacheFields**, as specified in [ISO/IEC-29500-4] section A.2, with a **hierarchy** attribute that specifies a **CT_CacheHierarchy**, as specified in [ISO/IEC-29500-4] section A.2, with a zero-based index in the list of **CT_CacheHierarchy** elements specified by the **CT_CacheHierarchies** element, as specified in([ISO/IEC-29500-4] section A.2, equal to the zero-based index of the ancestor **CT_PivotHierarchy** element in the list of **CT_PivotHierarchy** elements specified by **CT_PivotHierarchies**, as specified in [ISO/IEC-29500-4] section A.2. Additionally, that **CT_DataField** element MUST have a descendant **CT_DataField** element, as specified in section 2.6.25, with a **sourceField** attribute specified.

For more details, see section 2.6.25.

Attributes:

ignore : A **Boolean** attribute, as specified in [XMLSCHEMA2] section 3.2.2, that MUST be "true" and MUST be ignored.

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

```
<xsd:complexType name="CT_PivotHierarchy">
  <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.48 CT_CacheField

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: cacheField

This complex type specifies the ancestor **CT_CacheField** ([ISO/IEC-29500-4] section A.2) element that SHOULD<15> be ignored.

The following table lists the restrictions on attributes of the ancestor **CT_CacheField** element.

Name	Value
caption	MUST NOT be specified.
databaseField	MUST NOT be specified.
formula	MUST NOT be specified.
level	MUST equal "32767".
mappingCount	MUST NOT be specified.
memberPropertyField	MUST NOT be specified.
numFmtId	MUST equal zero ("0").
propertyName	MUST NOT be specified.
serverField	MUST NOT be specified.

Name	Value
sqlType	MUST NOT be specified.
uniqueList	MUST NOT be specified.

The following table lists the restrictions on child elements of the ancestor **CT_CacheField** element.

Child element	Restriction
CT_CacheField (this element)	Exactly 1 MUST exist.
CT_FieldGroup ([ISO/IEC-29500-4] section A.2)	MUST NOT exist.
CT_X ([ISO/IEC-29500-4] section A.2)	MUST NOT exist.
CT_SharedItems ([ISO/IEC-29500-4] section A.2)	MUST NOT exist.

If this element exists, there MUST exist a **CT_DataField** ([ISO/IEC-29500-4] section A.2) element with a **fld** attribute equal to the zero-based index of the ancestor **CT_CacheFiel** element in the list of **CT_CacheField** elements specified by **CT_CacheFields** ([ISO/IEC-29500-4] section A.2). Additionally, that **CT_DataField** element MUST have a descendant **CT_DataField** element (section 2.6.25) with a **sourceField** attribute specified.

For more details, see CT_DataField

Attributes:

ignore : A **Boolean** ([XMLSCHEMA2] section 3.2.2) attribute that MUST be "true" and MUST be ignored.

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

```
<xsd:complexType name="CT_CacheField">
  <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.49 CT_ConditionalFormats

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotTableDefinition

This complex type specifies a collection of conditional formats applied to the PivotTable ([ISO/IEC-29500-1] section 18.10) view.

Child Elements:

conditionalFormat : A CT_ConditionalFormat element that specifies the conditional formatting applied to the PivotTable ([ISO/IEC-29500-1] section 18.10) view.

Attributes:

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of **conditionalFormat** child elements of this element.

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

```
<xsd:complexType name="CT_ConditionalFormats">
  <xsd:sequence>
    <xsd:element name="conditionalFormat" minOccurs="1" maxOccurs="unbounded"
type="CT_ConditionalFormat"/>
  </xsd:sequence>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.50 CT_ConditionalFormat

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_ConditionalFormats

This complex type specifies the scope, type, and priority of conditional formatting applied to this PivotTable ([ISO/IEC-29500-1] section 18.10) view.

Child Elements:

pivotAreas : A **CT_PivotAreas** ([ISO/IEC-29500-4] section A.2) element that specifies a set of PivotTable areas this conditional formatting applies to.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

scope : An **ST_Scope** ([ISO/IEC-29500-1] section 18.18.67) attribute that specifies the scope of this conditional formatting.

type : An **ST_Type** ([ISO/IEC-29500-1] section 18.18.84) attribute that MUST NOT be present or MUST be equal to "none".

priority : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the priority of the PivotTable conditional formatting. This value MUST be greater than or equal to 1. If this attribute is present, there MUST exist a CT_CfRule with a **priority** attribute equal to the value of this field and it MUST be the same CT_CfRule element that is specified by **id**. The CT_CfRule specified by this value MUST have an ancestor CT_ConditionalFormatting element with a **pivot** attribute equal to "true".

id : An **ST_Guid** ([ISO/IEC-29500-1] section 22.9.2.4) attribute that specifies a particular CT_CfRule. There MUST exist a CT_CfRule with an **id** attribute equal to this value and it MUST be the same CT_CfRule element that is specified by **priority**.

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

```
<xsd:complexType name="CT_ConditionalFormat">
```

```
    <xsd:sequence>
      <xsd:element name="pivotAreas" type="x:CT_PivotAreas" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="extLst" minOccurs="0" maxOccurs="1" type="x:CT_ExtensionList"/>
    </xsd:sequence>
    <xsd:attribute name="scope" type="x:ST_Scope" default="selection" use="optional"/>
    <xsd:attribute name="type" type="x:ST_Type" default="none" use="optional"/>
    <xsd:attribute name="priority" use="optional" type="xsd:unsignedInt"/>
    <xsd:attribute name="id" type="x:ST_Guid" use="required"/>
  </xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.51 CT_SlicerStyles

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: slicerStyles

A complex type that specifies a group of slicer styles and the default slicer style to apply to slicers.

Child Elements:

slicerStyle : A CT_SlicerStyle element that specifies a slicer style.

Attributes:

defaultSlicerStyle : A string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the name of the default slicer style to apply to slicers. The length of the string MUST be greater than or equal to 1 character and less than or equal to 255 characters.

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

```
<xsd:complexType name="CT_SlicerStyles">
  <xsd:sequence>
    <xsd:element name="slicerStyle" type="CT_SlicerStyle" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="defaultSlicerStyle" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.52 CT_SlicerStyleElements

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerStyle

A complex type that specifies the list of table style ([ISO/IEC-29500-1] section 18.8) elements of a slicer style that are specific to slicers.

Child Elements:

slicerStyleElement : A CT_SlicerStyleElement element that specifies a table style ([ISO/IEC-29500-1] section 18.8) element of a slicer style that is specific to slicers.

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

```
<xsd:complexType name="CT_SlicerStyleElements">
  <xsd:sequence>
    <xsd:element name="slicerStyleElement" type="CT_SlicerStyleElement" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.53 CT_IgnoredErrors

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: ignoredErrors

A complex type that specifies a list of cell ranges and the types of cell errors that are to be ignored for each of those specific cell ranges.

Child Elements:

ignoredError : A CT_IgnoredError element that specifies the types of cell errors that are to be ignored for a specific cell range.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

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

```
<xsd:complexType name="CT_IgnoredErrors">
  <xsd:sequence>
    <xsd:element name="ignoredError" type="CT_IgnoredError" minOccurs="0"
maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.54 CT_IgnoredError

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_IgnoredErrors

A complex type that specifies the types of cell errors that are to be ignored for a specific cell range. This complex type is equivalent to **CT_IgnoredError** ([ISO/IEC-29500-1] section 18.3.1.50), but allows the **sqref** child element to have greater than or equal to 8,192 ref child elements.

Child Elements:

xm:sqref : A sqref element that specifies the range where cell errors have been ignored. This sqref MUST have greater than or equal to 8,192 ref child elements.

Attributes:

evalError : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore calculation errors.

twoDigitTextYear : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from the formatting of date/time values.

numberStoredAsText : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from the formatting of numeric values.

formula : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from formulas that are inconsistent with formulas ([ISO/IEC-29500-1] section 18.17) in neighboring cells.

formulaRange : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from formulas ([ISO/IEC-29500-1] section 18.17) that contain references to less than the entirety of a range containing contiguous data.

unlockedFormula : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from unprotected formulas ([ISO/IEC-29500-1] section 18.17).

emptyCellReference : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from references to empty cells.

listDataValidation : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from data validation.

calculatedColumn : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether to ignore errors arising from **calculated column** formulas ([ISO/IEC-29500-1] section 18.17).

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

```
<xsd:complexType name="CT_IgnoredError">
  <xsd:sequence>
    <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="evalError" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="twoDigitTextYear" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="numberStoredAsText" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="formula" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="formulaRange" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="unlockedFormula" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="emptyCellReference" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="listDataValidation" type="xsd:boolean" use="optional"
default="false"/>
  <xsd:attribute name="calculatedColumn" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.55 CT_ProtectedRanges

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: protectedRanges

A complex type that specifies a group of protected ranges on the sheet. MUST contain fewer than 2^{31} elements.

Child Elements:

protectedRange : A CT_ProtectedRange element that specifies the properties for a single protected range.

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

```
<xsd:complexType name="CT_ProtectedRanges">
  <xsd:sequence>
    <xsd:element name="protectedRange" type="CT_ProtectedRange" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.56 CT_ProtectedRange

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_ProtectedRanges

A complex type that specifies a cell range to be unprotected. The cell range is editable with a password or proper **credentials** when sheet **protection** is on and the cell is **locked**.

Child Elements:

xm:sqref : A sqref element that specifies the cell range to be unprotected.

Attributes:

password : An **ST_UnsignedShortHex** ([ISO/IEC-29500-4] section 10.7.2) attribute that specifies the verifier value of the password required for editing the cell range. If the value is 0x0000, then there is no password.

The verifier value is calculated in two stages. First, the provided **Unicode** password string is converted to a new character string in the ANSI code page of the current system by using the algorithm specified in the **revisionsPassword** attribute in [ISO/IEC-29500-1] section 18.2.29. Second, this string is input into the **XOR obfuscation** algorithm specified in [MS-OFFCRYPTO] section 2.3.7.1 to produce a 16-bit password verifier value.

This attribute MUST NOT be present if **algorithmName** is present.

algorithmName : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the name of the **hash** algorithm used to calculate **hashValue**. If this attribute is present, **hashValue**, **saltValue**, and **spinCount** MUST also be present. This attribute MUST NOT be present if **password** is present.

hashValue : A **base64Binary** ([XMLSCHEMA2] section 3.2.16) attribute that specifies the hash value for the password required to edit this range. This value will be compared with the resulting

hash value after hashing the user-supplied password by using the algorithm specified by **algorithmName**, and if the two values match, the protection will no longer be enforced.

Password hashes are usually computed by the algorithm specified in [MS-OFFCRYPTO] section 2.4.2.4. Under some circumstances, the password is first converted to a 16-bit verifier value and reinterpreted as a single Unicode character, which is then passed to the algorithm specified in [MS-OFFCRYPTO] section 2.4.2.4. There is no way to determine which method was used to generate a hash without knowledge of the password; it is necessary to compute both hashes to verify the password.

This attribute MUST be present if and only if **algorithmName** is present.

saltValue : A **base64Binary** ([XMLSCHEMA2] section 3.2.16) attribute that specifies the **salt** used to calculate **hashValue**. This attribute MUST be present if and only if **algorithmName** is present.

spinCount : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of times that the hash function was iterated over the password to generate the **hashValue**. It MUST NOT be greater than 10,000,000. This attribute MUST be present if and only if **algorithmName** is present.

name : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the title of the cell range. The value MUST be unique for the sheet. The number of characters in the string MUST be greater than or equal to 1, and less than or equal to 255. The string MUST conform to the following **Augmented Backus-Naur Form (ABNF)** ([RFC5234]) grammar:

```
string =  name-start-character *name-character

name-start-character = "_" / "\" / Unicode-character

name-character = name-start-character / Unicode-space / Unicode-digit / "?" / "."
```

The following points summarize this grammar:

- Unicode-character is any code point that is a character as defined by the Unicode character properties, [UNICODE5.1] chapter 4.
- Unicode-digit is any code point that is a digit as defined by the Unicode character properties, [UNICODE5.1] chapter 4.
- Unicode-space is any code point that is a space as defined by the Unicode character properties, [UNICODE5.1] chapter 4.

securityDescriptor : A **string** ([XMLSCHEMA2] section 3.2.1) attribute that specifies a **security descriptor** ([MS-WSO] section 3.1.2.3.2) that lists users who can edit the cell range without providing the password.

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

```
<xsd:complexType name="CT_ProtectedRange">
  <xsd:sequence maxOccurs="1">
    <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="password" type="x:ST_UnsignedShortHex" use="optional"/>
  <xsd:attribute name="algorithmName" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="hashValue" type="xsd:base64Binary" use="optional"/>
```

```
    <xsd:attribute name="saltValue" type="xsd:base64Binary" use="optional"/>
    <xsd:attribute name="spinCount" type="xsd:unsignedInt" use="optional"/>
    <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
    <xsd:attribute name="securityDescriptor" type="xsd:string" use="optional"/>
  </xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.57 CT_IconFilter

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: iconFilter

This complex type specifies the icon set and particular icon within that set to filter by. Rows with a cell icon that do not match these criteria will be hidden when the filter is applied.

Attributes:

iconSet : An ST_IconSetType attribute that specifies the icon set used as the filter criteria.

iconId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the index of the icon to be used as filter criteria. If **iconSet** is "NoIcons", this value MUST be -1 and this record does not specify a filter and MUST be ignored. If **iconSet** is not "NoIcons", this value MUST be greater than or equal to 0. If the icon set specified by **iconSet** has three icons, this value MUST be less than or equal to 2. If the icon set specified by **iconSet** has four icons, this value MUST be less than or equal to 3. If the icon set specified by **iconSet** has five icons, this value MUST be less than or equal to 4.

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

```
<xsd:complexType name="CT_IconFilter">
  <xsd:attribute name="iconSet" type="ST_IconSetType" use="required"/>
  <xsd:attribute name="iconId" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.58 CT_Filter

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: filter

This complex type specifies a filter criterion. Rows that contain a cell within the filter range that have value **val** will not be hidden by this **filter** criteria. Rows that do not contain such a cell inside a **filters** element ([ISO/IEC-29500-1] section 18.3.2.8) will be hidden.

Attributes:

val : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the value to be used as a filter criterion. The length of this value MUST be less than 65536 characters.

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

```
<xsd:complexType name="CT_Filter">
  <xsd:attribute name="val" type="x:ST_Xstring"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.59 CT_CustomFilters

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: customFilters

This complex type specifies custom filter criteria. Rows that contain a cell within the filter range such that the value does not meet the custom filter criteria will be hidden.

Child Elements:

customFilter : A **CT_CustomFilter** element that specifies a custom filter criterion.

Attributes:

and : A **Boolean** attribute that specifies the relationship between custom filter criterion. This attribute only applies when there are two criteria.

Value	Meaning
"false"	The two criterions are related by an OR relationship. That is, for a cell value to meet the custom filter criteria, at least one criterion specified by the **customFilter** child elements must be met.
"true"	The two criterions are related by an AND relationship. That is, for a cell value to meet the custom filter criteria, both criteria specified by the **customFilter** child elements must be met.

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

```
<xsd:complexType name="CT_CustomFilters">
  <xsd:sequence>
    <xsd:element name="customFilter" type="CT_CustomFilter" minOccurs="1" maxOccurs="2"/>
  </xsd:sequence>
  <xsd:attribute name="and" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.60 CT_CustomFilter

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_CustomFilters

This complex type specifies a custom filter criterion.

Attributes:

operator : An **ST_FilterOperator** ([ISO/IEC-29500-1] section 18.18.31) attribute that specifies the operator of the custom filter criterion.

val : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the value to be used as a custom filter criterion. The length of this value MUST be less than 65536 characters.

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

```
<xsd:complexType name="CT_CustomFilter">
  <xsd:attribute name="operator" type="x:ST_FilterOperator" default="equal" use="optional"/>
  <xsd:attribute name="val" type="x:ST_Xstring"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.61 CT_SortCondition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: sortCondition

A complex type that specifies a sort condition to apply to a range.

Attributes:

descending : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies the direction of the **sort**.

Value	Meaning
"false"	If **sortBy** is "value", sort in ascending order. If **sortBy** is "cellColor" or "fontColor", cells in which the cell color or cell font color specified by **dxfId** occurs are ordered at the top of the range. If **sortBy** is "icon", cells in which the icon specified by **iconSet** and **iconId** occurs are ordered at the top of the range.
"true"	If **sortBy** is "value", sort in descending order. If **sortBy** is "cellColor" or "fontColor", cells in which the cell color or cell font color specified by **dxfId** occurs are ordered at the bottom of the range. If **sortBy** is "icon", cells in which the icon specified by **iconSet** and **iconId** occurs are ordered at the bottom of the range.

sortBy : An **ST_SortBy** ([ISO/IEC-29500-1] section 18.18.72) attribute that specifies how the cells in a range are sorted.

ref : An **ST_Ref** ([ISO/IEC-29500-1] section 18.18.62) attribute that specifies the row (2) or **column (2)** to which this sort condition applies. This value MUST be contained within the **ref** in the **sortState** element that precedes this element. If the **sortState.columnSort** attribute that precedes this element is "false", this value specifies the column (2) to which this sort **condition** applies and there MUST be only a single column (2) specified by **ref**. If the **sortState.columnSort** attribute that precedes this element is "true", this value specifies the row (2) to which this sort condition applies and there MUST be only a single row (2) specified by ref.

customList : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies a comma-delimited list of strings that specifies a custom **sort order (2)**. The order of strings in the

list specifies the sort order (2). When a cell value matches a string in the list, it is sorted ahead of the cell values that match a later string in the list, and so on for each cell in the range. MUST be ignored if **sortBy** is not equal to "value".

dxfId : An **ST_DxfId** ([ISO/IEC-29500-1] section 18.18.25) attribute that specifies the format identifier when **sortBy** equals "cellColor" or **sortBy** equals "fontColor". MUST NOT be present if **sortBy** equals "icon" or "value".

iconSet : An ST_IconSetType attribute that specifies the icon set when **sortBy** equals "icon". The absence of this attribute means no icon. MUST NOT be present if **sortBy** is not equal to "icon".

iconId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the zero-based index of an icon in an icon set. If the icon set specified by **iconSet** has three icons, this value MUST be less than or equal to 2. If the icon set specified by **iconSet** has four icons, this value MUST be less than or equal to 3. If the icon set specified by **iconSet** has five icons, this value MUST be less than or equal to 4. The absence of this attribute means no icon. MUST NOT be present if **sortBy** is not equal to "icon".

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

```
<xsd:complexType name="CT_SortCondition">
  <xsd:attribute name="descending" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="sortBy" type="x:ST_SortBy" use="optional" default="value"/>
  <xsd:attribute name="ref" type="x:ST_Ref" use="required"/>
  <xsd:attribute name="customList" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="dxfId" type="x:ST_DxfId" use="optional"/>
  <xsd:attribute name="iconSet" type="ST_IconSetType" use="optional" default="3Arrows"/>
  <xsd:attribute name="iconId" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.62 CT_SourceConnection

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: sourceConnection

A complex type that stores the connection as specified by the **CT_Connection** element, as specified in [ISO/IEC-29500-4] section A.2, associated with this pivot cache. The pivot cache MUST be associated with an OLAP slicer cache.

Attributes:

name : An **ST_Xstring** (**[ISO/IEC-29500-1]** section 22.9.2.19) attribute that specifies the name of the connection as specified by the attribute **name** of **CT_Connection** (**[ISO/IEC-29500-4]** section A.2) of the connection associated with this pivot cache. The length of this value MUST be less than 65536 characters.

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

```
<xsd:complexType name="CT_SourceConnection">
  <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
```

```
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.63 CT_ListItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_ListItems

A complex type that stores a single item for a list box or a drop-down form control<16>.

Attributes:

val : A **string** attribute, as specified in [XMLSCHEMA2] section 3.2.1, that specifies the data for a single item.

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

```
<xsd:complexType name="CT_ListItem">
  <xsd:attribute name="val" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.64 CT_ListItems

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_FormControlPr

A complex type that contains a list of items of type **CT_ListItem**, as specified in section 2.6.63, to populate a list box or a drop-down form control. When present, the **FmlaRange** attribute of **CT_FormControlPr**, as specified in section 2.6.65, takes precedence over this element. This element is valid only for list box and drop-down form control.

Child Elements:

item : A **CT_ListItem** element that contains a single data item for a list box or drop-down form control.

extLst : A **CT_ExtensionList** element, as specified in ([ISO/IEC-29500-4] section A.2, that specifies future extensibility for this element.

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

```
<xsd:complexType name="CT_ListItems">
  <xsd:sequence>
    <xsd:element name="item" type="CT_ListItem" minOccurs="0" maxOccurs="unbounded"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.65 CT_FormControlPr

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: formControlPr

A complex type that stores a form control's properties.

Child Elements:

itemLst : A **CT_ListItems** element, as specified in section 2.6.64, that specifies a list of items to populate a list box or drop-down form control.

extLst : A **CT_ExtensionList** element, as specified in [ISO/IEC-29500-4] section A.2, that specifies future extensibility for this element.

Attributes:

objectType : An ST_ObjectType attribute that specifies the form control object type.

checked : A ST_Checked attribute that specifies whether a check box is selected or a radio button is selected. This attribute only applies to check box and radio button form controls.

colored : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether a drop-down object has a color applied to it. This attribute only applies to drop-down form controls.

dropLines : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of lines in the drop-down before scroll bars are added. This attribute only applies to drop-down form controls. This value MUST be at least 0 and at most 30000.

dropStyle : An ST_DropStyle attribute that specifies the style of the drop-down. This attribute only applies to drop-down form controls.

dx : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the width of the scroll bar in pixels. This attribute only applies to list boxes, scroll bars, spin boxes and drop-downs<17>.

firstButton : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the object is the first button in a set of radio buttons. This attribute only applies to radio button form controls.

fmlaGroup : An **ST_Formula** ([ISO/IEC-29500-1] section 18.18.35) attribute that specifies the cell an object in a group box is linked to. This attribute overrides the attribute **fmlaLink** for any radio buttons within a group box. This attribute only applies to group box form controls. The application can chose to remove and not save this element and use the attribute **fmlaLink** of the first radio button in the group. This attribute MUST be a cell reference (see [ISO/IEC-29500-1] section 18.17.2.3).

fmlaLink : An **ST_Formula** ([ISO/IEC-29500-1] section 18.18.35) attribute that specifies the cell the object is linked to. This attribute only applies to check boxes, radio buttons, scroll bars, spin boxes, drop-downs and list boxes. The value in the linked cell and the index of the selected item in the object are linked together. This link is ignored if the form control allows multiple selections. This attribute MUST be a cell reference (see [ISO/IEC-29500-1] section 18.17.2.3).

fmlaRange : An **ST_Formula** ([ISO/IEC-29500-1] section 18.18.35) attribute that specifies the range of source data cells. This is used to populate a list box or a drop-down form control<18>. This

attribute only applies to list box and drop-down form controls. This attribute MUST be a cell reference (see [ISO/IEC-29500-1] section 18.17.2.3).

fmlaTxbx : An **ST_Formula** ([ISO/IEC-29500-1] section 18.18.35) attribute that specifies the source data cell that the form control object's data is linked to. Any cell range MAY be specified but only the first cell in the range is considered. This attribute applies only to label and edit box form controls. This attribute MUST be a cell reference (see [ISO/IEC-29500-1] section 18.17.2.3).

horiz : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies that the scroll bar is horizontal. This attribute only applies to scroll bar form controls.

inc : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the change in the current value of a scroll bar or a spin box form control as a result of on an increment click. If present, it MUST be at least 0 and at most 30000. This attribute applies only to scroll bar or spin box form controls.

lockText : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies that the object's text is locked. This attribute applies only to button, radio button, check box and label form controls.

max : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the maximum value generated by the scroll bar (when scrolled all the way down) or by the spin box. It MUST be at least 0 and at most 30000. This attribute only applies to scroll bars and spin boxes.

min : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the minimum value generated by the scroll bar (when scrolled all the way up) or by the spin box. It MUST be at least 0 and at most 30000. This attribute only applies to scroll bars and spin box.

multiSel : A string ([XMLSCHEMA2] section 3.2.1) attribute that specifies the indices of selected items as a comma-delimited list. The list indices are one-based. This attribute is valid only if the attribute **selType** has the value "multi". This attribute applies only to list box form controls.

noThreeD : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies that 3-D effects are disabled. This attribute only applies to check box, radio button, group box, scroll bar, drop-down, list box, and spin box form controls.

page : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of items to move the scroll bar or spin box on a page click. It MUST be at least 0 and at most 30000<19>.

sel : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the index of the selected item. The list indices are one-based. If set to a value of 0, no items are selected. This attribute applies only to list box and drop-down form controls.

seltype : An ST_SelType attribute that specifies the selection type for the list box. This attribute applies only to list box form controls.

val : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of top rows currently hidden in the scroll bar. If omitted, the value is assumed to be 0. Those rows are hidden but still accessible by clicking the scroll bar buttons. The number of top hidden rows can change as the user interacts with the scroll bar. This attribute only applies to scroll bar, spin box, list box, and drop-down form controls.

widthMin : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the smallest width allowed for the drop-down box window in screen pixels. This attribute only applies for drop-down form controls.

editVal : A ST_EditValidation attribute that specifies how the edit box content is validated if the application chooses to validate it. This attribute only applies to edit box form controls.

multiLine : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies that the form control is multiline. This attribute only applies to edit box form controls. This attribute only works when the form control is run in a dialog box.

verticalBar : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies that the control has a vertical scroll bar. This attribute only applies to edit box form controls. This attribute only works when the form control is run in a dialog box.

passwordEdit : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies if the edit box control stores a password. In this case the control will display * for every character on it. This attribute only applies to edit box form controls. This attribute only works when the control is run in a dialog box.

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

```
<xsd:complexType name="CT_FormControlPr">
  <xsd:sequence>
    <xsd:element name="itemLst" type="CT_ListItems" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="objectType" type="ST_ObjectType" use="optional"/>
  <xsd:attribute name="checked" type="ST_Checked" use="optional"/>
  <xsd:attribute name="colored" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="dropLines" type="xsd:unsignedInt" use="optional" default="8"/>
  <xsd:attribute name="dropStyle" type="ST_DropStyle" use="optional"/>
  <xsd:attribute name="dx" type="xsd:unsignedInt" use="optional" default="80"/>
  <xsd:attribute name="firstButton" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="fmlaGroup" type="x:ST_Formula" use="optional"/>
  <xsd:attribute name="fmlaLink" type="x:ST_Formula" use="optional"/>
  <xsd:attribute name="fmlaRange" type="x:ST_Formula" use="optional"/>
  <xsd:attribute name="fmlaTxbx" type="x:ST_Formula" use="optional"/>
  <xsd:attribute name="horiz" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="inc" type="xsd:unsignedInt" use="optional" default="1"/>
  <xsd:attribute name="lockText" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="max" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="min" type="xsd:unsignedInt" use="optional" default="0"/>
  <xsd:attribute name="multiSel" type="xsd:string" use="optional"/>
  <xsd:attribute name="noThreeD" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="page" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="sel" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="seltype" type="ST_SelType" use="optional" default="single"/>
  <xsd:attribute name="val" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="widthMin" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="editVal" type="ST_EditValidation" use="optional"/>
  <xsd:attribute name="multiLine" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="verticalBar" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="passwordEdit" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.66 CT_DatastoreItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: datastoreItem

A complex type that specifies properties for an embedded custom data part.

Child Elements:

extLst : A **CT_ExtensionList** element, as specified in ([ISO/IEC-29500-4] section A.2, that specifies future extensibility for this element.

Attributes:

id : An **ST_Xstring** attribute, as specified in ([ISO/IEC-29500-1] section 22.9.2.19, that specifies the identifier for the associated Custom Data storage. The value of the string is used to identify the associated Custom Data storage, and the value of the string MUST be unique for each Custom Data storage in the workbook. The length of this value MUST be less than 65536 characters.

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

```
<xsd:complexType name="CT_DatastoreItem">
  <xsd:sequence>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="id" type="x:ST_Xstring" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.67 CT_Slicers

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: slicers

A complex type that specifies a list of **CT_Slicer** elements, as specified in section 2.6.69. The list of **CT_Slicer** elements specifies all slicer views on the worksheet.

Child Elements:

slicer : A **CT_Slicer** element that specifies a slicer view on the worksheet.

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

```
<xsd:complexType name="CT_Slicers">
  <xsd:sequence>
    <xsd:element name="slicer" type="CT_Slicer" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.68 CT_Slicer

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_Slicers

A complex type that specifies a slicer view, as specified in section 2.3.2.2, in this worksheet.

Child Elements:

extLst : A **CT_ExtensionList** element, a specified in [ISO/IEC-29500-4] section A.2, that specifies future extensibility for this element.

Attributes:

name : An **ST_Xstring** attribute, as specified in [ISO/IEC-29500-1] section 22.9.2.19, that specifies the name of the slicer view. MUST be a unique case-insensitive name within the scope of this workbook. The length of this attribute MUST be greater than or equal to 1 character and MUST be less than or equal to 32767 characters.

cache : An **ST_Xstring** attribute that specifies the name of the slicer cache, as specified in section 2.3.2.1, that this slicer view is associated with. There MUST be a **CT_SlicerCacheDefinition** element, as specified in section 2.6.70, within this workbook with the **name** attribute equal to the value of this attribute.

caption : An **ST_Xstring** attribute that specifies the caption of the slicer view. If this string exists, the length MUST be greater than or equal to 1 character.

startItem : An **unsignedInt** attribute, as specified in [XMLSCHEMA2] section 3.3.22, that specifies the zero-based index of the first slicer item, as specified in section 2.3.2.1.4, displayed by the slicer view.

columnCount : An **unsignedInt** attribute that specifies the number of columns in the slicer view. MUST be greater than or equal to 1 and MUST be less than or equal to 20000.

showCaption : A **Boolean** attribute that specifies whether the caption in displayed.

level : An **unsignedInt** attribute that specifies the OLAP level of the OLAP hierarchy of the slicer source data used by this slicer view.

If the slicer source data is OLAP, the value MUST be greater than or equal to 0 and MUST be less than **count** of the CT_OlapSlicerCacheLevelsData element specified by the CT_SlicerCacheDefinition element specified by **cache**. If the OLAP hierarchy has an **OLAP All level**, the value MUST NOT be 0.

If the slicer source data is non-OLAP, this attribute MUST NOT exist.

style : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the slicer style of the slicer view. If this field exists, this string MUST match the **name** attribute of a CT_SlicerStyle element within this workbook or MUST be equal to one of the built-in slicer style names:

Built-in slicer style names
SlicerStyleLight1
SlicerStyleLight2

Built-in slicer style names
SlicerStyleLight3
SlicerStyleLight4
SlicerStyleLight5
SlicerStyleLight6
SlicerStyleOther1
SlicerStyleOther2
SlicerStyleDark1
SlicerStyleDark2
SlicerStyleDark3
SlicerStyleDark4
SlicerStyleDark5
SlicerStyleDark6

lockedPosition : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies if the slicer view is locked.

rowHeight : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the row height of the slicer view in **English Metric Units (EMUs)**.

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

```
<xsd:complexType name="CT_Slicer">
  <xsd:sequence>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
  <xsd:attribute name="cache" type="x:ST_Xstring" use="required"/>
  <xsd:attribute name="caption" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="startItem" type="xsd:unsignedInt" use="optional" default="0"/>
  <xsd:attribute name="columnCount" type="xsd:unsignedInt" use="optional" default="1"/>
  <xsd:attribute name="showCaption" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="level" type="xsd:unsignedInt" use="optional" default="0"/>
  <xsd:attribute name="style" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="lockedPosition" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="rowHeight" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.69 CT_Slicer

Target namespace: http://schemas.microsoft.com/office/drawing/2010/slicer

Referenced by: slicer

This complex type specifies which slicer view is associated with this drawing element.

Child Elements:

extLst : A **CT_OfficeArtExtensionList** ([ISO/IEC-29500-4] section A.4.1) element that specifies future extensibility for this element.

Attributes:

name : A **string** ([XMLSCHEMA2] section 3.2.1) attribute that specifies the name of the slicer view that is associated with this drawing element. The value of this attribute MUST match the value of the **name** attribute of a **slicer** element within the CT_Slicers element for the current worksheet.

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

```
<xsd:complexType name="CT_Slicer">
  <xsd:sequence>
    <xsd:element name="extLst" type="a:CT_OfficeArtExtensionList" minOccurs="0"
maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="required"/>
</xsd:complexType>
```

See section 5.4 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.70 CT_SlicerCacheDefinition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: slicerCacheDefinition

A complex type that specifies a slicer cache.

Child Elements:

pivotTables : A **CT_SlicerCachePivotTables** element (section 2.6.72) that specifies a group of **CT_SlicerCachePivotTable** elements (section 2.6.73) that specify the PivotTable ([ISO/IEC-29500-1] section 18.10) views that are filtered by the slicer cache (section 2.1.4).

data : A **CT_SlicerCacheData** element (section 2.6.71) that specifies a data source (1) for the slicer cache.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

name : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the name of the slicer cache. MUST adhere to the name production rule provided in section 2.2.2. MUST be a unique case-insensitive name within the scope of defined names.

sourceName : An **ST_Xstring** attribute that specifies the MDX unique name or **PivotTable** ([ISO/IEC-29500-1] section 18.10) cache field of the associated PivotTable **PivotCache** used by the slicer cache.

- If the slicer source data (section 2.3.2.1.1)is a non-OLAP data source (1), the value of this attribute MUST be equal to the **name** attribute of a **CT_CacheField** ([ISO/IEC-29500-4] section A.2) element in the list of cache fields, as specified in section 2.3.2.1.2, and specify a **PivotTable** cache field. The specified **CT_CacheField** MUST have a **serverField** attribute equal to "false". The **includeNewItemsInFilter** attributes of the **CT_PivotField** ([ISO/IEC-29500-4] section A.2) elements of all included **CT_CacheField** elements MUST be equal.
- If the slicer source data is an OLAP data source (1), the value MUST be equal to the value of the **uniqueName** attribute in one of the **CT_CacheHierarchy** ([ISO/IEC-29500-4] section A.2) elements within the associated OLAP pivot cache, as specified in section 2.3.2.1.3, and specify a MDX unique name. The following attributes of the **CT_CacheHierarchy** element MUST be "false": **measure**, **set**, and **measures**. The **CT_PivotHierarchy** ([ISO/IEC-29500-4] section A.2) element with a zero-based index in the list of **CT_PivotHierarchy** elements specified by the **CT_PivotHierarchies** ([ISO/IEC-29500-4] section A.2) equal to the zero-based index of the **CT_CacheHierarchy** element in the list of **CT_CacheHierarchy** elements specified by **CT_CacheHierarchies** ([ISO/IEC-29500-4] section A.2) MUST have an **includeNewItemsInFilter** attribute equal to "false".

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

```
<xsd:complexType name="CT_SlicerCacheDefinition">
  <xsd:sequence>
    <xsd:element name="pivotTables" type="CT_SlicerCachePivotTables" minOccurs="0"
maxOccurs="1"/>
    <xsd:element name="data" type="CT_SlicerCacheData" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
  <xsd:attribute name="sourceName" type="x:ST_Xstring" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.71 CT_SlicerCacheData

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerCacheDefinition

A complex type that specifies a data source (1) for the slicer cache.

Child Elements:

olap : A CT_OlapSlicerCache element that specifies an OLAP data source (1).

tabular : A CT_TabularSlicerCache element that specifies a non-OLAP data source (1).

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

```
<xsd:complexType name="CT_SlicerCacheData">
  <xsd:choice minOccurs="1" maxOccurs="1">
    <xsd:element name="olap" type="CT_OlapSlicerCache" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="tabular" type="CT_TabularSlicerCache" minOccurs="1" maxOccurs="1"/>
  </xsd:choice>
```

```
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.72 CT_SlicerCachePivotTables

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerCacheDefinition

A complex type that specifies a group of CT_SlicerCachePivotTable elements that specify the PivotTable ([ISO/IEC-29500-1] section 18.10) views that are filtered by the slicer cache.

Child Elements:

pivotTable : A CT_SlicerCachePivotTable element that specifies the PivotTable ([ISO/IEC-29500-1] section 18.10) view that is filtered. The list of **pivotTable** child elements MUST NOT contain duplicates. The **showCalcMbrs** attribute of all **CT_PivotTableDefinition** ([ISO/IEC-29500-4] section A.2) elements associated with PivotTables ([ISO/IEC-29500-1] section 18.10) that are specified by **pivotTable** child elements MUST have the same value.

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

```
<xsd:complexType name="CT_SlicerCachePivotTables">
  <xsd:sequence>
    <xsd:element name="pivotTable" type="CT_SlicerCachePivotTable" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.73 CT_SlicerCachePivotTable

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerCachePivotTables

A complex type that specifies a PivotTable ([ISO/IEC-29500-1] section 18.10) view filtered by a slicer cache.

Attributes:

tabId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the unique identifier (UID) of the worksheet that contains the PivotTable ([ISO/IEC-29500-1] section 18.10) view specified by the **name** attribute. MUST match the **sheetId** of an existing sheet ([ISO/IEC-29500-4] section A.2) element within the workbook.

name : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the name of the PivotTable ([ISO/IEC-29500-1] section 18.10) view on the worksheet specified by **tabId**. MUST match the **name** attribute of an existing pivotTableDefinition element in the worksheet. The **createdVersion** attribute of the **CT_PivotTableDefinition** ([ISO/IEC-29500-4] section A.2) element that defines the specified PivotTable ([ISO/IEC-29500-1] section 18.10) MUST be greater than or equal to 3. Field **showCalcMbrs** of all PivotTable ([ISO/IEC-29500-1] section 18.10) MUST

have the same value. Field **calculatedMembersInFilters** of CT_PivotTableDefinition of all PivotTable ([ISO/IEC-29500-1] section 18.10) MUST have the same value.

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

```
<xsd:complexType name="CT_SlicerCachePivotTable">
  <xsd:attribute name="tabId" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.74 CT_OlapSlicerCacheItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheRange

This element specifies an OLAP slicer item of the OLAP level in the OLAP hierarchy specified by the ancestor CT_OlapSlicerCacheLevelData element. This element contains a list of all ancestor OLAP members of this OLAP slicer item in the OLAP hierarchy.

Child Elements:

p : A CT_OlapSlicerCacheItemParent element that specifies the OLAP members that are ascendants of the OLAP slicer item specified by this element. The first element in this list specifies the OLAP member that is the parent of the OLAP slicer item specified by this element. Each subsequent element in this list specifies an ascendant OLAP member in the next level up the OLAP hierarchy.

Attributes:

n : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of the OLAP member associated with the OLAP slicer item specified by this element.

c : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the caption of the OLAP slicer item specified by this element.

nd : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether the OLAP slicer item specified by this element has no data associated with it. This attribute MUST NOT exist if the **crossFilter** attribute of the ancestor element CT_OlapSlicerCacheLevelData is "none". For more information, see Slicer Cross Filtering.

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

```
<xsd:complexType name="CT_OlapSlicerCacheItem">
  <xsd:sequence>
    <xsd:element name="p" type="CT_OlapSlicerCacheItemParent" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="n" type="x:ST_Xstring" use="required"/>
  <xsd:attribute name="c" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="nd" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.75 CT_OlapSlicerCacheItemParent

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheItem, CT_OlapSlicerCacheSelection

This element specifies an ancestor OLAP member of the OLAP member specified by CT_OlapSlicerCacheItem or CT_OlapSlicerCacheSelection element that contains this element.

Attributes:

n : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of the OLAP member specified by this element.

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

```
<xsd:complexType name="CT_OlapSlicerCacheItemParent">
  <xsd:attribute name="n" type="x:ST_Xstring" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.76 CT_OlapSlicerCacheRange

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheRanges

A complex type that specifies a collection of cached OLAP slicer items in the OLAP level specified by the ancestor CT_OlapSlicerCacheLevelData element.

Child Elements:

i : A CT_OlapSlicerCacheItem element that specifies an OLAP slicer item in the OLAP level specified by the CT_OlapSlicerCacheLevelData element that is part of this range. The number of CT_OlapSlicerCacheItem child elements MUST be greater than 0 and equal to or less than 1,000.

Attributes:

startItem : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the zero-based index of the OLAP member on this OLAP level for the first item in this range. The order of the OLAP slicer item is determined by the current sort order (2) and current slicer cross filtering setting applied to all OLAP slicer items on this OLAP level. The value of the starting position MUST be 0 or MUST be a multiple of 1,000. See Slicer Items for more information.

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

```
<xsd:complexType name="CT_OlapSlicerCacheRange">
  <xsd:sequence>
    <xsd:element name="i" type="CT_OlapSlicerCacheItem" minOccurs="1" maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="startItem" type="xsd:unsignedInt" use="required"/>
```

```
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.77 CT_OlapSlicerCacheRanges

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheLevelData

A complex type that specifies the cached OLAP slicer items for the OLAP level specified by the CT_OlapSlicerCacheLevelData element.

Child Elements:

range : A CT_OlapSlicerCacheRange element that specifies a range of OLAP slicer items for this OLAP level within the OLAP hierarchy specified by this slicer cache.

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

```
<xsd:complexType name="CT_OlapSlicerCacheRanges">
  <xsd:sequence>
    <xsd:element name="range" type="CT_OlapSlicerCacheRange" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.78 CT_OlapSlicerCacheLevelData

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheLevelsData

A complex type that specifies the properties of an OLAP level in the OLAP hierarchy specified by this slicer cache and specifies the OLAP members that are cached for this OLAP level within the OLAP hierarchy specified by this slicer cache.

Child Elements:

ranges : A CT_OlapSlicerCacheRanges element that specifies cached OLAP slicer items for the OLAP level specified by this element.

Attributes:

uniqueName : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of the OLAP level specified by this element within the OLAP hierarchy specifies with this slicer cache. The length of this string MUST be at least 1 character and MUST NOT exceed 32,767 characters.

sourceCaption : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the caption of the OLAP level specified by this element within the OLAP hierarchy specified with this cache. The length of this string MUST NOT exceed 65,535 characters.

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the total number of OLAP members in the OLAP data source (1) in this OLAP level within the OLAP hierarchy specified by this slicer cache. The default value is zero.

sortOrder : An ST_OlapSlicerCacheSortOrder attribute that specifies how the OLAP slicer items for the OLAP level specified by this element are sorted in the slicer view.

crossFilter : An ST_SlicerCacheCrossFilter attribute that specifies how the OLAP slicer items that are used in slicer cross filtering are displayed.

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

```
<xsd:complexType name="CT_OlapSlicerCacheLevelData">
  <xsd:sequence>
    <xsd:element name="ranges" type="CT_OlapSlicerCacheRanges" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="uniqueName" type="x:ST_Xstring" use="required"/>
  <xsd:attribute name="sourceCaption" type="x:ST_Xstring" use="optional"/>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="sortOrder" type="ST_OlapSlicerCacheSortOrder" use="optional"
default="natural"/>
  <xsd:attribute name="crossFilter" type="ST_SlicerCacheCrossFilter" use="optional"
default="showItemsWithDataAtTop"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.79 CT_OlapSlicerCacheLevelsData

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCache

A complex type that specifies a list of OLAP levels of the OLAP hierarchy specified by this slicer cache.

Child Elements:

level : A CT_OlapSlicerCacheLevelData element that specifies properties of an OLAP level in the OLAP hierarchy specified by this slicer cache.

Attributes:

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of **level** child elements of this element.

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

```
<xsd:complexType name="CT_OlapSlicerCacheLevelsData">
  <xsd:sequence>
    <xsd:element name="level" type="CT_OlapSlicerCacheLevelData" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
```

```
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.80 CT_OlapSlicerCache

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerCacheData

A complex type that specifies the associated OLAP PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache, and specifies OLAP Slicer Items. See Slicer Cache Relationship to PivotCache for more details.

Child Elements:

levels : A CT_OlapSlicerCacheLevelsData element that specifies a list of OLAP levels of the OLAP hierarchy specified by this slicer cache.

selections : A CT_OlapSlicerCacheSelections element that specifies a list of OLAP Slicer Items that are selected.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

pivotCacheId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the associated OLAP PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache. MUST be equal to the **pivotCacheId** attribute of an existing CT_PivotCacheDefinition element.

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

```
<xsd:complexType name="CT_OlapSlicerCache">
  <xsd:sequence>
    <xsd:element name="levels" type="CT_OlapSlicerCacheLevelsData" minOccurs="1"
maxOccurs="1"/>
    <xsd:element name="selections" type="CT_OlapSlicerCacheSelections" minOccurs="1"
maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="pivotCacheId" type="xsd:unsignedInt" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.81 CT_OlapSlicerCacheSelections

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCache

A complex type that specifies the OLAP slicer items that are selected in the slicer cache.

Child Elements:

selection : A CT_OlapSlicerCacheSelection element that specifies an OLAP slicer item that is selected in the slicer cache.

Attributes:

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of **selection** child elements of this element.

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

```
<xsd:complexType name="CT_OlapSlicerCacheSelections">
  <xsd:sequence>
    <xsd:element name="selection" type="CT_OlapSlicerCacheSelection" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.82 CT_OlapSlicerCacheSelection

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheSelections

A complex type that specifies an individual OLAP slicer item that is selected for filtering. This complex type also specifies the ancestor OLAP members of the OLAP member associated with the OLAP slicer item in the OLAP hierarchy.

Child Elements:

p : A CT_OlapSlicerCacheItemParent element that specifies OLAP members that are the ancestors of the OLAP member associated with the OLAP slicer item specified by this element. The first element in this list specifies the OLAP member that is the parent of the OLAP member associated with the OLAP slicer item specified by this element. Each subsequent element in this list specifies an ancestor OLAP member in the next level up the OLAP hierarchy, excluding the **OLAP All member**.

Attributes:

n : An **ST_Xstring** ([ISO/IEC-29500-1] section 22.9.2.19) attribute that specifies the MDX unique name of the OLAP member associated with the OLAP slicer item specified by this element.

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

```
<xsd:complexType name="CT_OlapSlicerCacheSelection">
  <xsd:sequence>
    <xsd:element name="p" type="CT_OlapSlicerCacheItemParent" minOccurs="0"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="n" type="x:ST_Xstring" use="required"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.83 CT_TabularSlicerCache

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerCacheData

A complex type that specifies non-OLAP slicer items that are cached within this slicer cache and properties of the slicer cache specific to non-OLAP slicer items.

Child Elements:

items : A CT_TabularSlicerCacheItems element that specifies non-OLAP slicer items that are cached within this slicer cache.

extLst : A **CT_ExtensionList** ([ISO/IEC-29500-4] section A.2) element that specifies future extensibility for this element.

Attributes:

pivotCacheId : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the associated non-OLAP PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache. MUST match the **pivotCacheId** attribute of an existing CT_PivotCacheDefinition element.

sortOrder : An ST_TabularSlicerCacheSortOrder attribute that specifies how the non-OLAP slicer items are sorted in the slicer view.

customListSort : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether **custom lists** are used when sorting the non-OLAP slicer items.

Value	Meaning
"false"	Custom lists are not used when sorting the non-OLAP slicer items.
"true"	Custom lists are used when sorting the non-OLAP slicer items.

showMissing : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether non-OLAP slicer items that correspond to unused PivotTable ([ISO/IEC-29500-1] section 18.10) cache items that existed previously, but are no longer present in the PivotTable ([ISO/IEC-29500-1] section 18.10) source data, are displayed.

Value	Meaning
"false"	The unused non-OLAP slicer items are not displayed.
"true"	The unused non-OLAP slicer items are displayed.

crossFilter : An ST_SlicerCacheCrossFilter attribute that specifies how the non-OLAP slicer items that are used in slicer cross filtering are displayed.

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

```
<xsd:complexType name="CT_TabularSlicerCache">
  <xsd:sequence>
    <xsd:element name="items" type="CT_TabularSlicerCacheItems" minOccurs="1" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
```

```
  <xsd:attribute name="pivotCacheId" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="sortOrder" type="ST_TabularSlicerCacheSortOrder" use="optional"
default="ascending"/>
  <xsd:attribute name="customListSort" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="showMissing" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="crossFilter" type="ST_SlicerCacheCrossFilter" use="optional"
default="showItemsWithDataAtTop"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.84 CT_TabularSlicerCacheItems

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TabularSlicerCache

A complex type that specifies non-OLAP slicer items that are cached within this slicer cache.

Child Elements:

i : A CT_TabularSlicerCacheItem element that specifies a non-OLAP slicer item that is cached within this slicer cache. All CT_TabularSlicerCacheItem elements within this slicer cache MUST have unique **x** attributes. At least one CT_TabularSlicerCacheItem element MUST have **s** attribute be "true".

Attributes:

count : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies the number of **i** child elements of this element.

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

```
<xsd:complexType name="CT_TabularSlicerCacheItems">
  <xsd:sequence>
    <xsd:element name="i" type="CT_TabularSlicerCacheItem" minOccurs="1"
maxOccurs="unbounded"/>
  </xsd:sequence>
  <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.6.85 CT_TabularSlicerCacheItem

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TabularSlicerCacheItems

A complex type that specifies a non-OLAP slicer item that is cached within this slicer cache.

Attributes:

x : An **unsignedInt** ([XMLSCHEMA2] section 3.3.22) attribute that specifies an index of the associated PivotTable ([ISO/IEC-29500-1] section 18.10) cache item in the associated **PivotTable** ([ISO/IEC-29500-1] section 18.10) cache field. MUST be within the range of items as specified by

the **count** attribute of the **CT_PivotCacheRecords** ([ISO/IEC-29500-4] section A.2) element of the associated non-OLAP PivotTable ([ISO/IEC-29500-1] section 18.10) PivotCache specified by the **pivotCacheId** attribute of the CT_TabularSlicerCache element that is an ancestor of this element.

s : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether a non-OLAP slicer item is selected.

nd : A Boolean ([XMLSCHEMA2] section 3.2.2) attribute that specifies whether a non-OLAP slicer item does not have data associated with it. MUST NOT exist if the **crossFilter** attribute of the CT_TabularSlicerCache element is equal to "none". For more information, see Slicer Cross Filtering.

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

```
<xsd:complexType name="CT_TabularSlicerCacheItem">
  <xsd:attribute name="x" type="xsd:unsignedInt" use="required"/>
  <xsd:attribute name="s" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="nd" type="xsd:boolean" use="optional" default="false"/>
</xsd:complexType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7 Simple Types

2.7.1 ST_Ref

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

Referenced by: ref, ST_Sqref

This simple type specifies a reference to a range of cells.

This simple type is identical to the **ST_Ref** ([ISO/IEC-29500-1] section 18.18.62) simple type with the following exception: This simple type MUST have the following grammar.

(A1-cell [":" A1-cell]) / ref-constant

The ABNF ([RFC5234]) definitions for A1-cell and ref-constant are specified in Formulas.

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

```
<xsd:simpleType name="ST_Ref">
  <xsd:restriction base="xsd:string"/>
</xsd:simpleType>
```

See section 5.2 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.2 ST_Sqref

Target namespace: http://schemas.microsoft.com/office/excel/2006/main

Referenced by: sqref, CT_ConditionalFormatting, CT_DataValidation, CT_Sparkline, CT_ProtectedRange, CT_IgnoredError

This simple type specifies a list of cell ranges.

This simple type is identical to the **ST_Sqref** ([ISO/IEC-29500-1] section 18.18.76) simple type with the following exceptions:

- MUST contain zero or more values of type ST_Ref.
- If the value contains an ST_Ref of value "#REF!", then it MUST be the only value in the list.
- The number of cell references in this simple type MUST be less than 2,147,483,647.

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

```
<xsd:simpleType name="ST_Sqref">
  <xsd:list itemType="ST_Ref"/>
</xsd:simpleType>
```

See section 5.2 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.3 ST_DispBlanksAs

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SparklineGroup

This simple type specifies how empty cells are plotted for all sparklines in the sparkline group.

Value	Meaning
span	Empty cells are plotted as interpolated.
gap	Empty cells are not plotted.
zero	Empty cells are plotted as zero.

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

```
<xsd:simpleType name="ST_DispBlanksAs">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="span"/>
    <xsd:enumeration value="gap"/>
    <xsd:enumeration value="zero"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.4 ST_SparklineAxisMinMax

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SparklineGroup

This simple type specifies information about how the vertical axis minimum or maximum is computed for this sparkline group.

Value	Meaning
individual	Specifies that the vertical axis minimum or maximum for each sparkline in this sparkline group is calculated automatically such that the data point with the **minimum** or maximum value can be displayed in the **plot area**.
group	Specifies that the vertical axis minimum or maximum is shared across all sparklines in this sparkline group and is calculated automatically such that the data point with the minimum or maximum value can be displayed in the plot area.
custom	Specifies that the vertical axis minimum or maximum for each sparkline in this sparkline group is specified by the **manualMin** attribute or the **manualMax** attribute of CT_SparklineGroup.

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

```
<xsd:simpleType name="ST_SparklineAxisMinMax">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="individual"/>
    <xsd:enumeration value="group"/>
    <xsd:enumeration value="custom"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.5 ST_SparklineType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SparklineGroup

This simple type specifies the type of the sparkline group.

Value	Meaning
line	Line sparklines.
column	Column sparklines.
stacked	100% stacked column sparklines.

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

```
<xsd:simpleType name="ST_SparklineType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="line"/>
    <xsd:enumeration value="column"/>
    <xsd:enumeration value="stacked"/>
  </xsd:restriction>
```

```
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.6 ST_PivotShowAs

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_DataField

This simple type specifies the display format values for a PivotTable ([ISO/IEC-29500-1] section 18.10) field.

Value	Meaning
percentOfParent	Percentage of parent total.
percentOfParentRow	Percentage of parent row total.
percentOfParentCol	Percentage of parent column total.
percentOfRunningTotal	Percentage of running total.
rankAscending	Rank ascending.
rankDescending	Rank descending.

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

```
<xsd:simpleType name="ST_PivotShowAs">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="percentOfParent"/>
    <xsd:enumeration value="percentOfParentRow"/>
    <xsd:enumeration value="percentOfParentCol"/>
    <xsd:enumeration value="percentOfRunningTotal"/>
    <xsd:enumeration value="rankAscending"/>
    <xsd:enumeration value="rankDescending"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.7 ST_DataBarDirection

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_DataBar

A simple type that specifies the direction of the data bar.

Value	Meaning
context	The direction of the data bar is determined by context.

Value	Meaning
leftToRight	The data bar is displayed in a **left-to-right** manner.
rightToLeft	The data bar is displayed in a right-to-left manner.

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

```
<xsd:simpleType name="ST_DataBarDirection">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="context"/>
    <xsd:enumeration value="leftToRight"/>
    <xsd:enumeration value="rightToLeft"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.8 ST_DataBarAxisPosition

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_DataBar

A simple type that specifies the axis position for the data bar.

Value	Meaning
automatic	The axis position for the data bar is calculated automatically.
middle	The axis position for the data bar is the midpoint of the cell.
none	There is no axis for the data bar.

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

```
<xsd:simpleType name="ST_DataBarAxisPosition">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="automatic"/>
    <xsd:enumeration value="middle"/>
    <xsd:enumeration value="none"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.9 ST_CfvoType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_Cfvo

This simple type specifies how the Conditional Formatting Value Object (CFVO) value is determined. In the following table, X represents a parameter value. The value of X is determined by the value of the **f** element in the parent CT_Cfvo element. If the **f** element in the parent CT_Cfvo element is absent, then the value of X is 0. MUST be a value from the following table.

Value	Meaning
num	X
percent	The minimum value in the range of cells that the conditional formatting rule applies to plus X percent of the difference between the maximum and minimum values in the range of cells that the conditional formatting rule applies to. For example, if the min and max values in the range are 1 and 10 respectively, and X is 10, then the CFVO value is 1.9.
max	The maximum value from the range of cells that the conditional formatting rule applies to.
min	The minimum value from the range of cells that the conditional formatting rule applies to.
formula	X, or if the **f** element is formed by the numerical-constant rule alone in the grammar provided in Formulas, the formula is ignored and X is 0.
percentile	The minimum value of the cell that is in the X percentile of the range of cells that the conditional formatting rule applies to.
autoMin	The smaller of zero or the minimum value from the range of cells that the conditional formatting rule applies to.
autoMax	The larger of zero or the maximum value from the range of cells that the conditional formatting rule applies to.

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

```
<xsd:simpleType name="ST_CfvoType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="num"/>
    <xsd:enumeration value="percent"/>
    <xsd:enumeration value="max"/>
    <xsd:enumeration value="min"/>
    <xsd:enumeration value="formula"/>
    <xsd:enumeration value="percentile"/>
    <xsd:enumeration value="autoMin"/>
    <xsd:enumeration value="autoMax"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.10 ST_IconSetType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_IconFilter, CT_SortCondition, CT_IconSet, CT_CfIcon

A simple type that specifies an icon set.

Value	Meaning
3Arrows	
3ArrowsGray	
3Flags	
3TrafficLights1	
3TrafficLights2	
3Signs	
3Symbols	
3Symbols2	
4Arrows	
4ArrowsGray	
4RedToBlack	
4Rating	
4TrafficLights	
5Arrows	
5ArrowsGray	
5Rating	
5Quarters	

Value	Meaning
3Stars	
3Triangles	
5Boxes	
NoIcons	No icon set

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

```
<xsd:simpleType name="ST_IconSetType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="3Arrows"/>
    <xsd:enumeration value="3ArrowsGray"/>
    <xsd:enumeration value="3Flags"/>
    <xsd:enumeration value="3TrafficLights1"/>
    <xsd:enumeration value="3TrafficLights2"/>
    <xsd:enumeration value="3Signs"/>
    <xsd:enumeration value="3Symbols"/>
    <xsd:enumeration value="3Symbols2"/>
    <xsd:enumeration value="4Arrows"/>
    <xsd:enumeration value="4ArrowsGray"/>
    <xsd:enumeration value="4RedToBlack"/>
    <xsd:enumeration value="4Rating"/>
    <xsd:enumeration value="4TrafficLights"/>
    <xsd:enumeration value="5Arrows"/>
    <xsd:enumeration value="5ArrowsGray"/>
    <xsd:enumeration value="5Rating"/>
    <xsd:enumeration value="5Quarters"/>
    <xsd:enumeration value="3Stars"/>
    <xsd:enumeration value="3Triangles"/>
    <xsd:enumeration value="5Boxes"/>
    <xsd:enumeration value="NoIcons"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.11 ST_PivotEditValueType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotEditValue

A simple type that specifies the type of the modified value in the PivotTable ([ISO/IEC-29500-1] section 18.10) data area using PivotTable what-if analysis.

Value	Meaning
number	Numerical value
dateTime	Date and time value
string	String value
boolean	Boolean value
error	Error value

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

```
<xsd:simpleType name="ST_PivotEditValueType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="number"/>
    <xsd:enumeration value="dateTime"/>
    <xsd:enumeration value="string"/>
    <xsd:enumeration value="boolean"/>
    <xsd:enumeration value="error"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.12 ST_AllocationMethod

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_PivotTableDefinition, CT_PivotChange

A simple type that specifies the method of allocation for PivotTable what-if analysis.

Value	Meaning
equalAllocation	Equal allocation
equalIncrement	Equal increment
weightedAllocation	Weighted allocation
weightedIncrement	Weighted increment

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

```
<xsd:simpleType name="ST_AllocationMethod">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="equalAllocation"/>
    <xsd:enumeration value="equalIncrement"/>
    <xsd:enumeration value="weightedAllocation"/>
    <xsd:enumeration value="weightedIncrement"/>
  </xsd:restriction>
```

```
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.13 ST_SlicerStyleType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_SlicerStyleElement

A simple type that specifies the types of table style ([ISO/IEC-29500-1] section 18.8) elements that are specific to slicers. The possible values are listed in the following table.

Value	Meaning
unselectedItemWithData	A slicer item with data that is not selected. Used for slicers only.
selectedItemWithData	A selected slicer item with data. Used for slicers only.
unselectedItemWithNoData	A slicer item with no data that is not selected. Used for slicers only.
selectedItemWithNoData	A selected slicer item with no data. Used for slicers only.
hoveredUnselectedItemWithData	A slicer item with data that is not selected and over which the mouse is paused on. Used for slicers only.
hoveredSelectedItemWithData	A selected slicer item with data and over which the mouse is paused on. Used for slicers only.
hoveredUnselectedItemWithNoData	A slicer item with no data that is not selected and over which the mouse is paused on. Used for slicers only.
hoveredSelectedItemWithNoData	A selected slicer item with no data and over which the mouse is paused on. Used for slicers only.

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

```
<xsd:simpleType name="ST_SlicerStyleType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="unselectedItemWithData"/>
    <xsd:enumeration value="selectedItemWithData"/>
    <xsd:enumeration value="unselectedItemWithNoData"/>
    <xsd:enumeration value="selectedItemWithNoData"/>
    <xsd:enumeration value="hoveredUnselectedItemWithData"/>
    <xsd:enumeration value="hoveredSelectedItemWithData"/>
    <xsd:enumeration value="hoveredUnselectedItemWithNoData"/>
    <xsd:enumeration value="hoveredSelectedItemWithNoData"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.14 ST_ObjectType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_FormControlPr

A simple type that specifies the types of form control objects. The possible values are included in the following table.

Value	Meaning
Button	Button control
CheckBox	Check-box control
Drop	Drop-down (combo box) control
GBox	Group box control; this control is used for grouping radio button form controls
Label	Label control
List	List box control
Radio	Radio button control
Scroll	Scroll bar control
Spin	Spin box control
EditBox	Edit box control

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

```
<xsd:simpleType name="ST_ObjectType">
  <xsd:restriction base="xsd:token">
    <xsd:enumeration value="Button"/>
    <xsd:enumeration value="CheckBox"/>
    <xsd:enumeration value="Drop"/>
    <xsd:enumeration value="GBox"/>
    <xsd:enumeration value="Label"/>
    <xsd:enumeration value="List"/>
    <xsd:enumeration value="Radio"/>
    <xsd:enumeration value="Scroll"/>
    <xsd:enumeration value="Spin"/>
    <xsd:enumeration value="EditBox"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.15 ST_Checked

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_FormControlPr

A simple type that specifies if a check box is selected or if the radio button is selected.

Value	Meaning
Unchecked	Object is unchecked or unselected.
Checked	Object is checked or selected.
Mixed	Mixed selection. Applies only to check boxes. The application can determine whether to consider this option as a check box that is not initialized and it is neither selected nor cleared.

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

```
<xsd:simpleType name="ST_Checked">
  <xsd:restriction base="xsd:token">
    <xsd:enumeration value="Unchecked"/>
    <xsd:enumeration value="Checked"/>
    <xsd:enumeration value="Mixed"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.16 ST_DropStyle

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_FormControlPr

This simple type specifies the style of a drop-down form control. The allowed values are included in the following table.

Value	Meaning
combo	Standard combo box.
comboedit	Editable combo box<20>.
simple	Standard combo box with only the drop-down button visible when the box is not expanded.

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

```
<xsd:simpleType name="ST_DropStyle">
  <xsd:restriction base="xsd:token">
    <xsd:enumeration value="combo"/>
    <xsd:enumeration value="comboedit"/>
    <xsd:enumeration value="simple"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.17 ST_SelType

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_FormControlPr

A simple type that specifies the selection type for the list box form control object. The allowed values are included in the following table.

Value	Meaning
single	Only single selection is allowed.
multi	Multiple selection is allowed. Clicking any item on the list will add it to the selection or, if already selected, will remove it from the selection.
extended	Multiple selection is allowed while the CTRL key is pressed.

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

```
<xsd:simpleType name="ST_SelType">
  <xsd:restriction base="xsd:token">
    <xsd:enumeration value="single"/>
    <xsd:enumeration value="multi"/>
    <xsd:enumeration value="extended"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.18 ST_EditValidation

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_FormControlPr

This simple type specifies the type of validation used for data input to the control. If omitted, the value is assumed to be text. If present, the application can proceed to validate the data accordingly. The valid values are included in the following table.

Value	Meaning
text	Edit box contains text.
integer	Edit box contains an integer.
number	Edit box contains a number.
reference	Edit box contains a cell reference ([ISO/IEC-29500-1] section 18.17.2.3).
formula	Edit box contains a spreadsheet formula ([ISO/IEC-29500-1] section 18.17).

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

```
<xsd:simpleType name="ST_EditValidation">
  <xsd:restriction base="xsd:token">
    <xsd:enumeration value="text"/>
    <xsd:enumeration value="integer"/>
    <xsd:enumeration value="number"/>
    <xsd:enumeration value="reference"/>
    <xsd:enumeration value="formula"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.19 ST_OlapSlicerCacheSortOrder

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheLevelData

A simple type that specifies how the OLAP slicer items are sorted in the slicer view.

Value	Meaning
natural	The OLAP slicer items are sorted in original order as determined by the OLAP slicer source data.
ascending	The OLAP slicer items are sorted in ascending alphabetical order.
descending	The OLAP slicer items are sorted in descending alphabetical order.

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

```
<xsd:simpleType name="ST_OlapSlicerCacheSortOrder">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="natural"/>
    <xsd:enumeration value="ascending"/>
    <xsd:enumeration value="descending"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.20 ST_TabularSlicerCacheSortOrder

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_TabularSlicerCache

A simple type that specifies how the non-OLAP slicer items are sorted in the slicer view.

Value	Meaning
ascending	The non-OLAP slicer items are sorted in ascending alphabetical order.
descending	The non-OLAP slicer items are sorted in descending alphabetical order.

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

```
<xsd:simpleType name="ST_TabularSlicerCacheSortOrder">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="ascending"/>
    <xsd:enumeration value="descending"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

2.7.21 ST_SlicerCacheCrossFilter

Target namespace: http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

Referenced by: CT_OlapSlicerCacheLevelData, CT_TabularSlicerCache

A simple type that specifies how the slicer items that are used in slicer cross filtering are displayed.

Value	Meaning
none	The table style ([ISO/IEC-29500-1] section 18.8) element of the slicer style for slicer items with no data is not applied to slicer items with no data, and slicer items with no data are not sorted separately in the list of slicer items in the slicer view.
showItemsWithDataAtTop	The table style ([ISO/IEC-29500-1] section 18.8) element of the slicer style for slicer items with no data is applied to slicer items with no data, and slicer items with no data are sorted at the bottom in the list of slicer items in the slicer view.
showItemsWithNoData	The table style ([ISO/IEC-29500-1] section 18.8) element of the slicer style for slicer items with no data is applied to slicer items with no data, and slicer items with no data are not sorted separately in the list of slicer items in the slicer view.

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

```
<xsd:simpleType name="ST_SlicerCacheCrossFilter">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="none"/>
    <xsd:enumeration value="showItemsWithDataAtTop"/>
    <xsd:enumeration value="showItemsWithNoData"/>
  </xsd:restriction>
</xsd:simpleType>
```

See section 5.3 for the full W3C XML Schema ([XMLSCHEMA1] section 2.1).

3 Structure Examples

This section contains examples of some of the most commonly used data structures in Excel Binary File Format files. The examples are meant to be a starting point for an implementer learning the file format. They are not meant to cover all records in the file format.

3.1 Slicer

This example shows a slicer attached to a native PivotTable and its associated slicer cache. The PivotTable has the "State" and "City" fields added to the row area and the "Population" field added to the data area. The slicer is based on the "State" field, and is currently filtering on "Washington".

The following figure shows a possible implementation of the slicer discussed in this example.

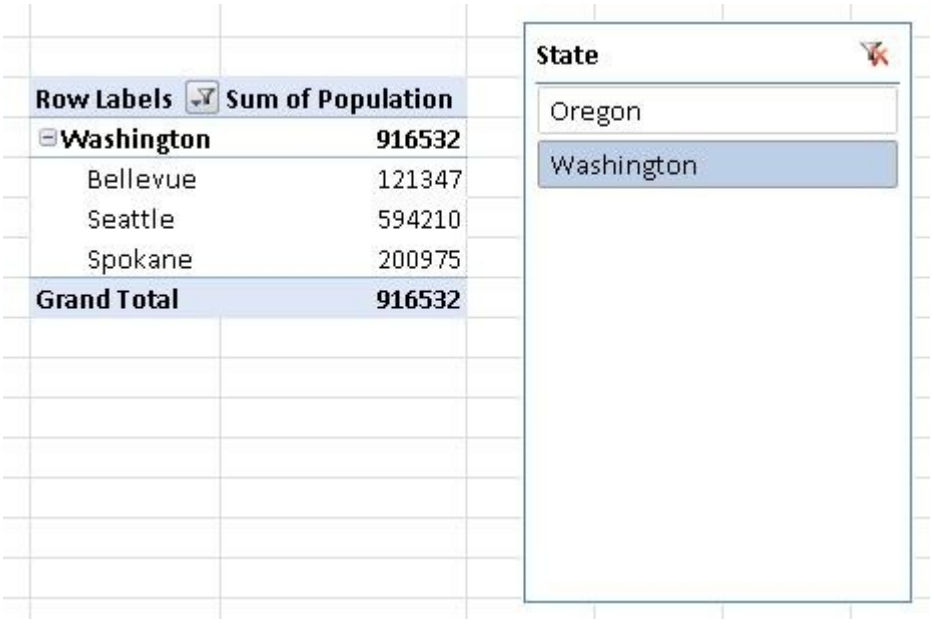

Figure 1: PivotTable and slicer

The following figure shows that the source data for the PivotTable that the slicer discussed in this example is filtering, as depicted on a possible implementation of a worksheet.

	A	B	C
1	State	City	Population
2	Washington	Seattle	594210
3	Washington	Spokane	200975
4	Washington	Bellevue	121347
5	Oregon	Portland	550396
6	Oregon	Springfield	56666

Figure 2: Source data for the PivotTable

This example includes the entire slicer cache and slicer parts that are used in the specification of a non-OLAP slicer.

The <i> elements inside the <items> element specify the cached non-OLAP slicer items. "Washington" and "Oregon" are the cached non-OLAP slicer items in this example.

3.1.1 Slicer Cache Part

The following is an example slicer cache part, as specified in section 2.1.4.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<slicerCacheDefinition xmlns="http://schemas.microsoft.com/office/spreadsheetml/2009/9/main"
xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006" mc:Ignorable="x"
xmlns:x="http://schemas.openxmlformats.org/spreadsheetml/2006/main" name="Slicer_State"
sourceName="State">
    <pivotTables>
        <pivotTable tabId="1" name="PivotTable1"/>
    </pivotTables>
    <data>
        <tabular pivotCacheId="5">
            <items count="2">
                <i x="1"/>
                <i x="0" s="1"/>
            </items>
        </tabular>
    </data>
</slicerCacheDefinition>
```

The following table describes the **slicerCacheDefinition** element used in this example.

Attribute name	Value	Notes
name	Slicer_State	This is the name of the slicer cache.
sourceName	State	This is the name of the associated slicer, as specified in section 2.1.5.

The following table describes the **pivotTable** element used in this example.

Attribute name	Value	Notes
tabId	1	This indicates that the associated PivotTable, as specified in [ISO/IEC-29500-1] section 18.10, is located on the first sheet.
name	PivotTable1	This is the name of the associated PivotTable..

The following table describes the **tabular** element used in this example.

Attribute name	Value	Notes
pivotCacheId	5	This indicates that the identifier of the associated PivotTable **PivotCache** is "5".

The following table describes the **items** element used in this example.

Attribute name	Value	Notes
count	2	This indicates that there are two items in the slicer cache.

The following table describes the first i (item) element used in this example.

Attribute name	Value	Notes
x	1	This indicates that the first item in the slicer cache is the second item in the PivotTable **PivotCache**.

The following table describes the second i (item) element used in this example.

Attribute name	Value	Notes
x	0	This indicates that the second item in the slicer cache is the first item in the PivotTable **PivotCache**.
s	1	This indicates that this item is selected in the slicer.

3.1.2 Slicer Part

The following is an example slicer part, as specified in section 2.1.5.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<slicers xmlns="http://schemas.microsoft.com/office/spreadsheetml/2009/9/main"
xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006" mc:Ignorable="x"
xmlns:x="http://schemas.openxmlformats.org/spreadsheetml/2006/main">
    <slicer name="State" cache="Slicer_State" caption="State" rowHeight="228600"/>
</slicers>
```

The following table describes the slicer element used in this example.

Attribute name	Value	Notes
name	State	This is the name of the slicer.
cache	Slicer_State	This is the name of the slicer cache, as specified in section 2.1.4.
caption	State	This is the caption displayed at the top of the slicer.
rowHeight	228600	This is the height of a row in EMUs, equal to one-fourth of an inch.

4 Security Considerations

The password verifier features available in the file format are used to prevent accidental modification, rather than being used as security features. It is possible to remove the passwords by removing the records containing the verifier values.

The translation of passwords from a double-byte Unicode string to a new character string in the ANSI code page of the current system converts any Unicode character that cannot be mapped to the ANSI code page of the current system to the 0x3F character in that code page, as described in [ISO/IEC-29500-1] section 18.2.29. Replacing these characters with "0x3F" when the hash is verified will generate positive hash value matches. In certain **locales**, this can be a significant portion of the everyday **character set (1)**.

Further security considerations regarding the file encryption algorithms are described in [MS-OFFCRYPTO] section 4.3.

5 Appendix A: Full XML Schemas

For ease of implementation, this section provides the full W3C XML schemas for the new elements, attributes, complex types, and simple types specified in the earlier sections. Any schema references to namespaces included in Office Open XML file formats as described in [ISO/IEC-29500:2008] refer specifically to the transitional schemas as described in [ISO/IEC-29500-4].

5.1 http://schemas.microsoft.com/office/spreadsheetml/2009/9/ac

```
<xsd:schema targetNamespace="http://schemas.microsoft.com/office/spreadsheetml/2009/9/ac"
elementFormDefault="qualified" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns="http://schemas.microsoft.com/office/spreadsheetml/2009/9/ac">
  <xsd:attribute name="dyDescent" type="xsd:double"/>
  <xsd:attribute name="knownFonts" type="xsd:boolean"/>
</xsd:schema>
```

5.2 http://schemas.microsoft.com/office/excel/2006/main

```
<xsd:schema xmlns="http://schemas.microsoft.com/office/excel/2006/main"
elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/office/excel/2006/main"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:x="http://schemas.openxmlformats.org/spreadsheetml/2006/main">
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="sml.xsd"/>
  <xsd:simpleType name="ST_Ref">
    <xsd:restriction base="xsd:string"/>
  </xsd:simpleType>
  <xsd:simpleType name="ST_Sqref">
    <xsd:list itemType="ST_Ref"/>
  </xsd:simpleType>
  <xsd:element name="f" type="x:ST_Formula"/>
  <xsd:element name="ref" type="ST_Ref"/>
  <xsd:element name="sqref" type="ST_Sqref"/>
</xsd:schema>
```

5.3 http://schemas.microsoft.com/office/spreadsheetml/2009/9/main

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:r="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
xmlns="http://schemas.microsoft.com/office/spreadsheetml/2009/9/main"
xmlns:x="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
xmlns:xm="http://schemas.microsoft.com/office/excel/2006/main"
targetNamespace="http://schemas.microsoft.com/office/spreadsheetml/2009/9/main"
elementFormDefault="qualified">
  <xsd:import namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
schemaLocation="sml.xsd"/>
  <xsd:import namespace="http://schemas.openxmlformats.org/officeDocument/2006/relationships"
schemaLocation="shared-relationshipReference.xsd"/>
  <xsd:import namespace="http://schemas.microsoft.com/office/excel/2006/main"
schemaLocation="sml-xm.xsd"/>
  <xsd:import schemaLocation="xlsst.xsd"
namespace="http://schemas.openxmlformats.org/spreadsheetml/2006/main"/>
  <xsd:element name="conditionalFormattings" type="CT_ConditionalFormattings"/>
  <xsd:element name="dataValidations" type="CT_DataValidations"/>
  <xsd:element name="sparklineGroups" type="CT_SparklineGroups"/>
  <xsd:element name="slicerList" type="CT_SlicerRefs"/>
```

```
  <xsd:element name="protectedRanges" type="CT_ProtectedRanges"/>
  <xsd:element name="ignoredErrors" type="CT_IgnoredErrors"/>
  <xsd:complexType name="CT_ConditionalFormattings">
    <xsd:sequence>
      <xsd:element name="conditionalFormatting" type="CT_ConditionalFormatting" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_ConditionalFormatting">
    <xsd:sequence>
      <xsd:element name="cfRule" type="CT_CfRule" minOccurs="0" maxOccurs="unbounded"/>
      <xsd:element ref="xm:sqref" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="extLst" minOccurs="0" type="x:CT_ExtensionList"/>
    </xsd:sequence>
    <xsd:attribute name="pivot" type="xsd:boolean" default="false" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_DataValidations">
    <xsd:sequence>
      <xsd:element name="dataValidation" type="CT_DataValidation" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="disablePrompts" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="xWindow" type="xsd:unsignedInt" use="optional"/>
    <xsd:attribute name="yWindow" type="xsd:unsignedInt" use="optional"/>
    <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_DataValidationFormula">
    <xsd:sequence>
      <xsd:element ref="xm:f" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_DataValidation">
    <xsd:sequence>
      <xsd:element name="formula1" type="CT_DataValidationFormula" minOccurs="0"
maxOccurs="1"/>
      <xsd:element name="formula2" type="CT_DataValidationFormula" minOccurs="0"
maxOccurs="1"/>
      <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="type" type="x:ST_DataValidationType" use="optional" default="none"/>
    <xsd:attribute name="errorStyle" type="x:ST_DataValidationErrorStyle" use="optional"
default="stop"/>
    <xsd:attribute name="imeMode" type="x:ST_DataValidationImeMode" use="optional"
default="noControl"/>
    <xsd:attribute name="operator" type="x:ST_DataValidationOperator" use="optional"
default="between"/>
    <xsd:attribute name="allowBlank" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="showDropDown" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="showInputMessage" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="showErrorMessage" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="errorTitle" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="error" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="promptTitle" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="prompt" type="x:ST_Xstring" use="optional"/>
  </xsd:complexType>
  <xsd:simpleType name="ST_DispBlanksAs">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="span"/>
```

```
      <xsd:enumeration value="gap"/>
      <xsd:enumeration value="zero"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:simpleType name="ST_SparklineAxisMinMax">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="individual"/>
      <xsd:enumeration value="group"/>
      <xsd:enumeration value="custom"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:complexType name="CT_SparklineGroups">
    <xsd:sequence>
      <xsd:element name="sparklineGroup" type="CT_SparklineGroup" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_SparklineGroup">
    <xsd:sequence>
      <xsd:element name="colorSeries" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorNegative" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorAxis" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorMarkers" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorFirst" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorLast" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorHigh" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element name="colorLow" minOccurs="0" maxOccurs="1" type="x:CT_Color"/>
      <xsd:element ref="xm:f" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="sparklines" type="CT_Sparklines" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="manualMax" type="xsd:double" use="optional"/>
    <xsd:attribute name="manualMin" type="xsd:double" use="optional"/>
    <xsd:attribute name="lineWeight" type="xsd:double" use="optional" default="0.75"/>
    <xsd:attribute name="type" type="ST_SparklineType" use="optional" default="line"/>
    <xsd:attribute name="dateAxis" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="displayEmptyCellsAs" type="ST_DispBlanksAs" use="optional"
default="zero"/>
    <xsd:attribute name="markers" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="high" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="low" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="first" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="last" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="negative" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="displayXAxis" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="displayHidden" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="minAxisType" type="ST_SparklineAxisMinMax" use="optional"
default="individual"/>
    <xsd:attribute name="maxAxisType" type="ST_SparklineAxisMinMax" use="optional"
default="individual"/>
    <xsd:attribute name="rightToLeft" type="xsd:boolean" use="optional" default="false"/>
  </xsd:complexType>
  <xsd:simpleType name="ST_SparklineType">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="line"/>
      <xsd:enumeration value="column"/>
      <xsd:enumeration value="stacked"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:complexType name="CT_Sparklines">
```

```
      <xsd:sequence>
        <xsd:element name="sparkline" type="CT_Sparkline" minOccurs="1" maxOccurs="unbounded"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CT_Sparkline">
      <xsd:sequence>
        <xsd:element ref="xm:f" minOccurs="0" maxOccurs="1"/>
        <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:element name="pivotCaches" type="x:CT_PivotCaches"/>
    <xsd:element name="slicerCaches" type="CT_SlicerCaches"/>
    <xsd:element name="workbookPr" type="CT_WorkbookPr"/>
    <xsd:complexType name="CT_WorkbookPr">
      <xsd:attribute name="defaultImageDpi" type="xsd:unsignedInt" default="220"/>
      <xsd:attribute name="discardImageEditData" type="xsd:boolean" default="false"/>
      <xsd:attribute name="accuracyVersion" type="xsd:unsignedInt" default="0"/>
    </xsd:complexType>
    <xsd:complexType name="CT_SlicerRefs">
      <xsd:sequence>
        <xsd:element name="slicer" type="CT_SlicerRef" minOccurs="1" maxOccurs="unbounded"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CT_SlicerRef">
      <xsd:attribute ref="r:id" use="required"/>
    </xsd:complexType>
    <xsd:complexType name="CT_SlicerCaches">
      <xsd:sequence>
        <xsd:element name="slicerCache" type="CT_SlicerCache" minOccurs="1"
  maxOccurs="unbounded"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CT_SlicerCache">
      <xsd:attribute ref="r:id" use="required"/>
    </xsd:complexType>
    <xsd:element name="calculatedMember" type="CT_CalculatedMember"/>
    <xsd:complexType name="CT_CalculatedMember">
      <xsd:sequence>
        <xsd:element name="tupleSet" minOccurs="0" maxOccurs="1" type="CT_TupleSet"/>
      </xsd:sequence>
      <xsd:attribute name="displayFolder" type="x:ST_Xstring" use="optional"/>
      <xsd:attribute name="flattenHierarchies" type="xsd:boolean" use="optional"
  default="true"/>
      <xsd:attribute name="dynamicSet" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="hierarchizeDistinct" type="xsd:boolean" use="optional"
  default="true"/>
      <xsd:attribute name="mdxLong" type="x:ST_Xstring" use="optional"/>
    </xsd:complexType>
    <xsd:complexType name="CT_TupleSet">
      <xsd:sequence>
        <xsd:element name="headers" type="CT_TupleSetHeaders" minOccurs="1" maxOccurs="1"/>
        <xsd:element name="rows" type="CT_TupleSetRows" minOccurs="1" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="rowCount" type="xsd:unsignedInt" use="optional" default="1"/>
      <xsd:attribute name="columnCount" type="xsd:unsignedInt" use="optional" default="1"/>
    </xsd:complexType>
    <xsd:complexType name="CT_TupleSetHeaders">
      <xsd:sequence>
```

```
      <xsd:element name="header" type="CT_TupleSetHeader" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_TupleSetHeader">
    <xsd:attribute name="uniqueName" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="hierarchyName" type="x:ST_Xstring" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_TupleSetRows">
    <xsd:sequence>
      <xsd:element name="row" type="CT_TupleSetRow" minOccurs="1" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_TupleSetRow">
    <xsd:sequence>
      <xsd:element name="rowItem" type="CT_TupleSetRowItem" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_TupleSetRowItem">
    <xsd:attribute name="u" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="d" type="x:ST_Xstring" use="optional"/>
  </xsd:complexType>
  <xsd:element name="cacheHierarchy" type="CT_CacheHierarchy"/>
  <xsd:complexType name="CT_SetLevels">
    <xsd:sequence>
      <xsd:element name="setLevel" minOccurs="1" maxOccurs="unbounded" type="CT_SetLevel"/>
    </xsd:sequence>
    <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_SetLevel">
    <xsd:attribute name="hierarchy" use="required" type="xsd:int"/>
  </xsd:complexType>
  <xsd:complexType name="CT_CacheHierarchy">
    <xsd:sequence>
      <xsd:element name="setLevels" minOccurs="0" maxOccurs="1" type="CT_SetLevels"/>
    </xsd:sequence>
    <xsd:attribute name="flattenHierarchies" type="xsd:boolean" use="optional"
default="true"/>
    <xsd:attribute name="measuresSet" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="hierarchizeDistinct" type="xsd:boolean" use="optional"
default="true"/>
    <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
  </xsd:complexType>
  <xsd:element name="dataField" type="CT_DataField"/>
  <xsd:complexType name="CT_DataField">
    <xsd:attribute name="pivotShowAs" type="ST_PivotShowAs" use="optional"/>
    <xsd:attribute name="sourceField" type="xsd:unsignedInt" use="optional"/>
    <xsd:attribute name="uniqueName" type="x:ST_Xstring" use="optional"/>
  </xsd:complexType>
  <xsd:simpleType name="ST_PivotShowAs">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="percentOfParent"/>
      <xsd:enumeration value="percentOfParentRow"/>
      <xsd:enumeration value="percentOfParentCol"/>
      <xsd:enumeration value="percentOfRunningTotal"/>
      <xsd:enumeration value="rankAscending"/>
      <xsd:enumeration value="rankDescending"/>
    </xsd:restriction>
```

```
</xsd:simpleType>
<xsd:simpleType name="ST_DataBarDirection">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="context"/>
    <xsd:enumeration value="leftToRight"/>
    <xsd:enumeration value="rightToLeft"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="ST_DataBarAxisPosition">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="automatic"/>
    <xsd:enumeration value="middle"/>
    <xsd:enumeration value="none"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="ST_CfvoType">
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="num"/>
    <xsd:enumeration value="percent"/>
    <xsd:enumeration value="max"/>
    <xsd:enumeration value="min"/>
    <xsd:enumeration value="formula"/>
    <xsd:enumeration value="percentile"/>
    <xsd:enumeration value="autoMin"/>
    <xsd:enumeration value="autoMax"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="CT_Cfvo">
  <xsd:sequence>
    <xsd:element ref="xm:f" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="ST_CfvoType" use="required"/>
  <xsd:attribute name="gte" type="xsd:boolean" use="optional" default="true"/>
</xsd:complexType>
<xsd:complexType name="CT_CfRule">
  <xsd:sequence>
    <xsd:element ref="xm:f" minOccurs="0" maxOccurs="3"/>
    <xsd:element name="colorScale" type="CT_ColorScale" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="dataBar" type="CT_DataBar" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="iconSet" type="CT_IconSet" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="dxf" type="x:CT_Dxf" minOccurs="0" maxOccurs="1"/>
    <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
  </xsd:sequence>
  <xsd:attribute name="type" type="x:ST_CfType" use="optional"/>
  <xsd:attribute name="priority" type="xsd:int" use="optional"/>
  <xsd:attribute name="stopIfTrue" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="aboveAverage" type="xsd:boolean" use="optional" default="true"/>
  <xsd:attribute name="percent" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="bottom" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="operator" type="x:ST_ConditionalFormattingOperator" use="optional"/>
  <xsd:attribute name="text" type="xsd:string" use="optional"/>
  <xsd:attribute name="timePeriod" type="x:ST_TimePeriod" use="optional"/>
  <xsd:attribute name="rank" type="xsd:unsignedInt" use="optional"/>
  <xsd:attribute name="stdDev" type="xsd:int" use="optional"/>
  <xsd:attribute name="equalAverage" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="activePresent" type="xsd:boolean" use="optional" default="false"/>
  <xsd:attribute name="id" type="x:ST_Guid" use="optional"/>
</xsd:complexType>
```

```
  <xsd:complexType name="CT_IconSet">
    <xsd:sequence>
      <xsd:element name="cfvo" type="CT_Cfvo" minOccurs="2" maxOccurs="unbounded"/>
      <xsd:element name="cfIcon" type="CT_CfIcon" minOccurs="0" maxOccurs="5"/>
    </xsd:sequence>
    <xsd:attribute name="iconSet" type="ST_IconSetType" use="optional"
default="3TrafficLights1"/>
    <xsd:attribute name="showValue" type="xsd:boolean" use="optional" default="true"/>
    <xsd:attribute name="percent" type="xsd:boolean" use="optional" default="true"/>
    <xsd:attribute name="reverse" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="custom" type="xsd:boolean" use="optional" default="false"/>
  </xsd:complexType>
  <xsd:complexType name="CT_ColorScale">
    <xsd:sequence>
      <xsd:element name="cfvo" type="CT_Cfvo" minOccurs="2" maxOccurs="unbounded"/>
      <xsd:element name="color" type="x:CT_Color" minOccurs="2" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_DataBar">
    <xsd:sequence>
      <xsd:element name="cfvo" type="CT_Cfvo" minOccurs="2" maxOccurs="2"/>
      <xsd:element name="fillColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="borderColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="negativeFillColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="negativeBorderColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="axisColor" type="x:CT_Color" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="minLength" type="xsd:unsignedInt" use="optional" default="10"/>
    <xsd:attribute name="maxLength" type="xsd:unsignedInt" use="optional" default="90"/>
    <xsd:attribute name="showValue" type="xsd:boolean" use="optional" default="true"/>
    <xsd:attribute name="border" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="gradient" type="xsd:boolean" use="optional" default="true"/>
    <xsd:attribute name="direction" type="ST_DataBarDirection" use="optional"
default="context"/>
    <xsd:attribute name="negativeBarColorSameAsPositive" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="negativeBarBorderColorSameAsPositive" type="xsd:boolean"
use="optional" default="true"/>
    <xsd:attribute name="axisPosition" type="ST_DataBarAxisPosition" use="optional"
default="automatic"/>
  </xsd:complexType>
  <xsd:element name="pivotField" type="CT_PivotField"/>
  <xsd:complexType name="CT_PivotField">
    <xsd:attribute name="fillDownLabels" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
  </xsd:complexType>
  <xsd:element name="pivotTableDefinition" type="CT_PivotTableDefinition"/>
  <xsd:complexType name="CT_PivotTableDefinition">
    <xsd:sequence>
      <xsd:element name="pivotEdits" type="CT_PivotEdits" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="pivotChanges" type="CT_PivotChanges" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="conditionalFormats" type="CT_ConditionalFormats" minOccurs="0"/>
    </xsd:sequence>
    <xsd:attribute name="fillDownLabelsDefault" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="visualTotalsForSets" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="calculatedMembersInFilters" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="altText" type="x:ST_Xstring" use="optional"/>
```

```
    <xsd:attribute name="altTextSummary" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="enableEdit" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="autoApply" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="allocationMethod" type="ST_AllocationMethod" use="optional"
default="equalAllocation"/>
    <xsd:attribute name="weightExpression" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="hideValuesRow" type="xsd:boolean" use="optional" default="false"/>
  </xsd:complexType>
  <xsd:element name="pivotCacheDefinition" type="CT_PivotCacheDefinition"/>
  <xsd:complexType name="CT_PivotCacheDefinition">
    <xsd:attribute name="slicerData" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="pivotCacheId" type="xsd:unsignedInt" use="optional"/>
    <xsd:attribute name="supportSubqueryNonVisual" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="supportSubqueryCalcMem" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="supportAddCalcMems" type="xsd:boolean" use="optional"
default="false"/>
  </xsd:complexType>
  <xsd:element name="connection" type="CT_Connection"/>
  <xsd:complexType name="CT_Connection">
    <xsd:sequence>
      <xsd:element name="calculatedMembers" type="x:CT_CalculatedMembers" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="culture" use="optional" type="x:ST_Xstring"/>
    <xsd:attribute name="embeddedDataId" use="optional" type="x:ST_Xstring"/>
  </xsd:complexType>
  <xsd:element name="table" type="CT_Table"/>
  <xsd:complexType name="CT_Table">
    <xsd:attribute name="altText" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="altTextSummary" type="x:ST_Xstring" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_CfIcon">
    <xsd:attribute name="iconSet" type="ST_IconSetType" use="required"/>
    <xsd:attribute name="iconId" type="xsd:unsignedInt" use="required"/>
  </xsd:complexType>
  <xsd:simpleType name="ST_IconSetType">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="3Arrows"/>
      <xsd:enumeration value="3ArrowsGray"/>
      <xsd:enumeration value="3Flags"/>
      <xsd:enumeration value="3TrafficLights1"/>
      <xsd:enumeration value="3TrafficLights2"/>
      <xsd:enumeration value="3Signs"/>
      <xsd:enumeration value="3Symbols"/>
      <xsd:enumeration value="3Symbols2"/>
      <xsd:enumeration value="4Arrows"/>
      <xsd:enumeration value="4ArrowsGray"/>
      <xsd:enumeration value="4RedToBlack"/>
      <xsd:enumeration value="4Rating"/>
      <xsd:enumeration value="4TrafficLights"/>
      <xsd:enumeration value="5Arrows"/>
      <xsd:enumeration value="5ArrowsGray"/>
      <xsd:enumeration value="5Rating"/>
      <xsd:enumeration value="5Quarters"/>
      <xsd:enumeration value="3Stars"/>
      <xsd:enumeration value="3Triangles"/>
      <xsd:enumeration value="5Boxes"/>
```

```
      <xsd:enumeration value="NoIcons"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:complexType name="CT_PivotEdits">
    <xsd:sequence>
      <xsd:element name="pivotEdit" minOccurs="1" maxOccurs="unbounded" type="CT_PivotEdit"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_PivotEdit">
    <xsd:sequence>
      <xsd:element name="userEdit" type="CT_PivotUserEdit" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="tupleItems" type="CT_TupleItems" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="pivotArea" type="x:CT_PivotArea" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_PivotChanges">
    <xsd:sequence>
      <xsd:element name="pivotChange" minOccurs="1" maxOccurs="unbounded"
type="CT_PivotChange"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_PivotChange">
    <xsd:sequence>
      <xsd:element name="editValue" type="CT_PivotEditValue" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="tupleItems" type="CT_TupleItems" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="allocationMethod" type="ST_AllocationMethod"
default="equalAllocation"/>
    <xsd:attribute name="weightExpression" type="x:ST_Xstring" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_PivotUserEdit">
    <xsd:choice minOccurs="1" maxOccurs="1">
      <xsd:element ref="xm:f" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="editValue" type="CT_PivotEditValue" minOccurs="1" maxOccurs="1"/>
    </xsd:choice>
  </xsd:complexType>
  <xsd:complexType name="CT_PivotEditValue">
    <xsd:simpleContent>
      <xsd:extension base="x:ST_Xstring">
        <xsd:attribute name="valueType" use="required" type="ST_PivotEditValueType"/>
      </xsd:extension>
    </xsd:simpleContent>
  </xsd:complexType>
  <xsd:simpleType name="ST_PivotEditValueType">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="number"/>
      <xsd:enumeration value="dateTime"/>
      <xsd:enumeration value="string"/>
      <xsd:enumeration value="boolean"/>
      <xsd:enumeration value="error"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:complexType name="CT_TupleItems">
    <xsd:sequence>
      <xsd:element name="tupleItem" type="x:ST_Xstring" minOccurs="1" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
```

```
    <xsd:simpleType name="ST_AllocationMethod">
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="equalAllocation"/>
        <xsd:enumeration value="equalIncrement"/>
        <xsd:enumeration value="weightedAllocation"/>
        <xsd:enumeration value="weightedIncrement"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:complexType name="CT_SlicerStyle">
      <xsd:sequence>
        <xsd:element name="slicerStyleElements" type="CT_SlicerStyleElements" minOccurs="0"
  maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="name" type="xsd:string" use="required"/>
    </xsd:complexType>
    <xsd:complexType name="CT_SlicerStyleElement">
      <xsd:attribute name="type" type="ST_SlicerStyleType" use="required"/>
      <xsd:attribute name="dxfId" type="x:ST_DxfId" use="optional"/>
    </xsd:complexType>
    <xsd:simpleType name="ST_SlicerStyleType">
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="unselectedItemWithData"/>
        <xsd:enumeration value="selectedItemWithData"/>
        <xsd:enumeration value="unselectedItemWithNoData"/>
        <xsd:enumeration value="selectedItemWithNoData"/>
        <xsd:enumeration value="hoveredUnselectedItemWithData"/>
        <xsd:enumeration value="hoveredSelectedItemWithData"/>
        <xsd:enumeration value="hoveredUnselectedItemWithNoData"/>
        <xsd:enumeration value="hoveredSelectedItemWithNoData"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:element name="slicerStyles" type="CT_SlicerStyles"/>
    <xsd:element name="dxfs" type="x:CT_Dxfs"/>
    <xsd:complexType name="CT_OleItem">
      <xsd:sequence>
        <xsd:element name="values" type="x:CT_DdeValues" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
      <xsd:attribute name="icon" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="advise" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="preferPic" type="xsd:boolean" use="optional" default="false"/>
    </xsd:complexType>
    <xsd:element name="oleItem" type="CT_OleItem"/>
    <xsd:element name="pivotHierarchy" type="CT_PivotHierarchy"/>
    <xsd:complexType name="CT_PivotHierarchy">
      <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
    </xsd:complexType>
    <xsd:element name="cacheField" type="CT_CacheField"/>
    <xsd:complexType name="CT_CacheField">
      <xsd:attribute name="ignore" type="xsd:boolean" default="false" use="optional"/>
    </xsd:complexType>
    <xsd:complexType name="CT_ConditionalFormats">
      <xsd:sequence>
        <xsd:element name="conditionalFormat" minOccurs="1" maxOccurs="unbounded"
  type="CT_ConditionalFormat"/>
      </xsd:sequence>
      <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
    </xsd:complexType>
    <xsd:complexType name="CT_ConditionalFormat">
```

```
    <xsd:sequence>
      <xsd:element name="pivotAreas" type="x:CT_PivotAreas" minOccurs="0" maxOccurs="1"/>
      <xsd:element name="extLst" minOccurs="0" maxOccurs="1" type="x:CT_ExtensionList"/>
    </xsd:sequence>
    <xsd:attribute name="scope" type="x:ST_Scope" default="selection" use="optional"/>
    <xsd:attribute name="type" type="x:ST_Type" default="none" use="optional"/>
    <xsd:attribute name="priority" use="optional" type="xsd:unsignedInt"/>
    <xsd:attribute name="id" type="x:ST_Guid" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_SlicerStyles">
    <xsd:sequence>
      <xsd:element name="slicerStyle" type="CT_SlicerStyle" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="defaultSlicerStyle" type="xsd:string" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_SlicerStyleElements">
    <xsd:sequence>
      <xsd:element name="slicerStyleElement" type="CT_SlicerStyleElement" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:element name="id" type="x:ST_Guid"/>
  <xsd:complexType name="CT_IgnoredErrors">
    <xsd:sequence>
      <xsd:element name="ignoredError" type="CT_IgnoredError" minOccurs="0"
maxOccurs="unbounded"/>
      <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_IgnoredError">
    <xsd:sequence>
      <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="evalError" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="twoDigitTextYear" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="numberStoredAsText" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="formula" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="formulaRange" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="unlockedFormula" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="emptyCellReference" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="listDataValidation" type="xsd:boolean" use="optional"
default="false"/>
    <xsd:attribute name="calculatedColumn" type="xsd:boolean" use="optional"
default="false"/>
  </xsd:complexType>
  <xsd:complexType name="CT_ProtectedRanges">
    <xsd:sequence>
      <xsd:element name="protectedRange" type="CT_ProtectedRange" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_ProtectedRange">
    <xsd:sequence maxOccurs="1">
      <xsd:element ref="xm:sqref" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="password" type="x:ST_UnsignedShortHex" use="optional"/>
```

```
      <xsd:attribute name="algorithmName" type="x:ST_Xstring" use="optional"/>
      <xsd:attribute name="hashValue" type="xsd:base64Binary" use="optional"/>
      <xsd:attribute name="saltValue" type="xsd:base64Binary" use="optional"/>
      <xsd:attribute name="spinCount" type="xsd:unsignedInt" use="optional"/>
      <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
      <xsd:attribute name="securityDescriptor" type="xsd:string" use="optional"/>
    </xsd:complexType>
    <xsd:element name="iconFilter" type="CT_IconFilter"/>
    <xsd:complexType name="CT_IconFilter">
      <xsd:attribute name="iconSet" type="ST_IconSetType" use="required"/>
      <xsd:attribute name="iconId" type="xsd:unsignedInt" use="required"/>
    </xsd:complexType>
    <xsd:element name="filter" type="CT_Filter"/>
    <xsd:complexType name="CT_Filter">
      <xsd:attribute name="val" type="x:ST_Xstring"/>
    </xsd:complexType>
    <xsd:element name="customFilters" type="CT_CustomFilters"/>
    <xsd:complexType name="CT_CustomFilters">
      <xsd:sequence>
        <xsd:element name="customFilter" type="CT_CustomFilter" minOccurs="1" maxOccurs="2"/>
      </xsd:sequence>
      <xsd:attribute name="and" type="xsd:boolean" use="optional" default="false"/>
    </xsd:complexType>
    <xsd:complexType name="CT_CustomFilter">
      <xsd:attribute name="operator" type="x:ST_FilterOperator" default="equal"
  use="optional"/>
      <xsd:attribute name="val" type="x:ST_Xstring"/>
    </xsd:complexType>
    <xsd:complexType name="CT_SortCondition">
      <xsd:attribute name="descending" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="sortBy" type="x:ST_SortBy" use="optional" default="value"/>
      <xsd:attribute name="ref" type="x:ST_Ref" use="required"/>
      <xsd:attribute name="customList" type="x:ST_Xstring" use="optional"/>
      <xsd:attribute name="dxfId" type="x:ST_DxfId" use="optional"/>
      <xsd:attribute name="iconSet" type="ST_IconSetType" use="optional" default="3Arrows"/>
      <xsd:attribute name="iconId" type="xsd:unsignedInt" use="optional"/>
    </xsd:complexType>
    <xsd:element name="sortCondition" type="CT_SortCondition"/>
    <xsd:element name="sourceConnection" type="CT_SourceConnection"/>
    <xsd:complexType name="CT_SourceConnection">
      <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
    </xsd:complexType>
    <xsd:element name="formControlPr" type="CT_FormControlPr"/>
    <xsd:complexType name="CT_ListItem">
      <xsd:attribute name="val" type="xsd:string" use="required"/>
    </xsd:complexType>
    <xsd:complexType name="CT_ListItems">
      <xsd:sequence>
        <xsd:element name="item" type="CT_ListItem" minOccurs="0" maxOccurs="unbounded"/>
        <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CT_FormControlPr">
      <xsd:sequence>
        <xsd:element name="itemLst" type="CT_ListItems" minOccurs="0" maxOccurs="1"/>
        <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="objectType" type="ST_ObjectType" use="optional"/>
      <xsd:attribute name="checked" type="ST_Checked" use="optional"/>
```

```
      <xsd:attribute name="colored" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="dropLines" type="xsd:unsignedInt" use="optional" default="8"/>
      <xsd:attribute name="dropStyle" type="ST_DropStyle" use="optional"/>
      <xsd:attribute name="dx" type="xsd:unsignedInt" use="optional" default="80"/>
      <xsd:attribute name="firstButton" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="fmlaGroup" type="x:ST_Formula" use="optional"/>
      <xsd:attribute name="fmlaLink" type="x:ST_Formula" use="optional"/>
      <xsd:attribute name="fmlaRange" type="x:ST_Formula" use="optional"/>
      <xsd:attribute name="fmlaTxbx" type="x:ST_Formula" use="optional"/>
      <xsd:attribute name="horiz" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="inc" type="xsd:unsignedInt" use="optional" default="1"/>
      <xsd:attribute name="lockText" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="max" type="xsd:unsignedInt" use="optional"/>
      <xsd:attribute name="min" type="xsd:unsignedInt" use="optional" default="0"/>
      <xsd:attribute name="multiSel" type="xsd:string" use="optional"/>
      <xsd:attribute name="noThreeD" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="page" type="xsd:unsignedInt" use="optional"/>
      <xsd:attribute name="sel" type="xsd:unsignedInt" use="optional"/>
      <xsd:attribute name="seltype" type="ST_SelType" use="optional" default="single"/>
      <xsd:attribute name="val" type="xsd:unsignedInt" use="optional"/>
      <xsd:attribute name="widthMin" type="xsd:unsignedInt" use="optional"/>
      <xsd:attribute name="editVal" type="ST_EditValidation" use="optional"/>
      <xsd:attribute name="multiLine" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="verticalBar" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="passwordEdit" type="xsd:boolean" use="optional" default="false"/>
    </xsd:complexType>
    <xsd:simpleType name="ST_ObjectType">
      <xsd:restriction base="xsd:token">
        <xsd:enumeration value="Button"/>
        <xsd:enumeration value="CheckBox"/>
        <xsd:enumeration value="Drop"/>
        <xsd:enumeration value="GBox"/>
        <xsd:enumeration value="Label"/>
        <xsd:enumeration value="List"/>
        <xsd:enumeration value="Radio"/>
        <xsd:enumeration value="Scroll"/>
        <xsd:enumeration value="Spin"/>
        <xsd:enumeration value="EditBox"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ST_Checked">
      <xsd:restriction base="xsd:token">
        <xsd:enumeration value="Unchecked"/>
        <xsd:enumeration value="Checked"/>
        <xsd:enumeration value="Mixed"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ST_DropStyle">
      <xsd:restriction base="xsd:token">
        <xsd:enumeration value="combo"/>
        <xsd:enumeration value="comboedit"/>
        <xsd:enumeration value="simple"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ST_SelType">
      <xsd:restriction base="xsd:token">
        <xsd:enumeration value="single"/>
        <xsd:enumeration value="multi"/>
        <xsd:enumeration value="extended"/>
```

```
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ST_EditValidation">
      <xsd:restriction base="xsd:token">
        <xsd:enumeration value="text"/>
        <xsd:enumeration value="integer"/>
        <xsd:enumeration value="number"/>
        <xsd:enumeration value="reference"/>
        <xsd:enumeration value="formula"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:element name="datastoreItem" type="CT_DatastoreItem"/>
    <xsd:complexType name="CT_DatastoreItem">
      <xsd:sequence>
        <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="id" type="x:ST_Xstring" use="required"/>
    </xsd:complexType>
    <xsd:element name="slicers" type="CT_Slicers"/>
    <xsd:complexType name="CT_Slicers">
      <xsd:sequence>
        <xsd:element name="slicer" type="CT_Slicer" minOccurs="1" maxOccurs="unbounded"/>
      </xsd:sequence>
    </xsd:complexType>
    <xsd:complexType name="CT_Slicer">
      <xsd:sequence>
        <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
      <xsd:attribute name="cache" type="x:ST_Xstring" use="required"/>
      <xsd:attribute name="caption" type="x:ST_Xstring" use="optional"/>
      <xsd:attribute name="startItem" type="xsd:unsignedInt" use="optional" default="0"/>
      <xsd:attribute name="columnCount" type="xsd:unsignedInt" use="optional" default="1"/>
      <xsd:attribute name="showCaption" type="xsd:boolean" use="optional" default="true"/>
      <xsd:attribute name="level" type="xsd:unsignedInt" use="optional" default="0"/>
      <xsd:attribute name="style" type="x:ST_Xstring" use="optional"/>
      <xsd:attribute name="lockedPosition" type="xsd:boolean" use="optional" default="false"/>
      <xsd:attribute name="rowHeight" type="xsd:unsignedInt" use="required"/>
    </xsd:complexType>
    <xsd:element name="slicerCacheDefinition" type="CT_SlicerCacheDefinition"/>
    <xsd:complexType name="CT_SlicerCacheDefinition">
      <xsd:sequence>
        <xsd:element name="pivotTables" type="CT_SlicerCachePivotTables" minOccurs="0"
maxOccurs="1"/>
        <xsd:element name="data" type="CT_SlicerCacheData" minOccurs="1" maxOccurs="1"/>
        <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
      </xsd:sequence>
      <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
      <xsd:attribute name="sourceName" type="x:ST_Xstring" use="required"/>
    </xsd:complexType>
    <xsd:simpleType name="ST_OlapSlicerCacheSortOrder">
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="natural"/>
        <xsd:enumeration value="ascending"/>
        <xsd:enumeration value="descending"/>
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ST_TabularSlicerCacheSortOrder">
      <xsd:restriction base="xsd:string">
```

```
      <xsd:enumeration value="ascending"/>
      <xsd:enumeration value="descending"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:simpleType name="ST_SlicerCacheCrossFilter">
    <xsd:restriction base="xsd:string">
      <xsd:enumeration value="none"/>
      <xsd:enumeration value="showItemsWithDataAtTop"/>
      <xsd:enumeration value="showItemsWithNoData"/>
    </xsd:restriction>
  </xsd:simpleType>
  <xsd:complexType name="CT_SlicerCacheData">
    <xsd:choice minOccurs="1" maxOccurs="1">
      <xsd:element name="olap" type="CT_OlapSlicerCache" minOccurs="1" maxOccurs="1"/>
      <xsd:element name="tabular" type="CT_TabularSlicerCache" minOccurs="1" maxOccurs="1"/>
    </xsd:choice>
  </xsd:complexType>
  <xsd:complexType name="CT_SlicerCachePivotTables">
    <xsd:sequence>
      <xsd:element name="pivotTable" type="CT_SlicerCachePivotTable" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_SlicerCachePivotTable">
    <xsd:attribute name="tabId" type="xsd:unsignedInt" use="required"/>
    <xsd:attribute name="name" type="x:ST_Xstring" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheItem">
    <xsd:sequence>
      <xsd:element name="p" type="CT_OlapSlicerCacheItemParent" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="n" type="x:ST_Xstring" use="required"/>
    <xsd:attribute name="c" type="x:ST_Xstring" use="optional"/>
    <xsd:attribute name="nd" type="xsd:boolean" use="optional" default="false"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheItemParent">
    <xsd:attribute name="n" type="x:ST_Xstring" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheRange">
    <xsd:sequence>
      <xsd:element name="i" type="CT_OlapSlicerCacheItem" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="startItem" type="xsd:unsignedInt" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheRanges">
    <xsd:sequence>
      <xsd:element name="range" type="CT_OlapSlicerCacheRange" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheLevelData">
    <xsd:sequence>
      <xsd:element name="ranges" type="CT_OlapSlicerCacheRanges" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="uniqueName" type="x:ST_Xstring" use="required"/>
    <xsd:attribute name="sourceCaption" type="x:ST_Xstring" use="optional"/>
```

```
    <xsd:attribute name="count" type="xsd:unsignedInt" use="required"/>
    <xsd:attribute name="sortOrder" type="ST_OlapSlicerCacheSortOrder" use="optional"
default="natural"/>
    <xsd:attribute name="crossFilter" type="ST_SlicerCacheCrossFilter" use="optional"
default="showItemsWithDataAtTop"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheLevelsData">
    <xsd:sequence>
      <xsd:element name="level" type="CT_OlapSlicerCacheLevelData" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCache">
    <xsd:sequence>
      <xsd:element name="levels" type="CT_OlapSlicerCacheLevelsData" minOccurs="1"
maxOccurs="1"/>
      <xsd:element name="selections" type="CT_OlapSlicerCacheSelections" minOccurs="1"
maxOccurs="1"/>
      <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="pivotCacheId" type="xsd:unsignedInt" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheSelections">
    <xsd:sequence>
      <xsd:element name="selection" type="CT_OlapSlicerCacheSelection" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_OlapSlicerCacheSelection">
    <xsd:sequence>
      <xsd:element name="p" type="CT_OlapSlicerCacheItemParent" minOccurs="0"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="n" type="x:ST_Xstring" use="required"/>
  </xsd:complexType>
  <xsd:complexType name="CT_TabularSlicerCache">
    <xsd:sequence>
      <xsd:element name="items" type="CT_TabularSlicerCacheItems" minOccurs="1"
maxOccurs="1"/>
      <xsd:element name="extLst" type="x:CT_ExtensionList" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="pivotCacheId" type="xsd:unsignedInt" use="required"/>
    <xsd:attribute name="sortOrder" type="ST_TabularSlicerCacheSortOrder" use="optional"
default="ascending"/>
    <xsd:attribute name="customListSort" type="xsd:boolean" use="optional" default="true"/>
    <xsd:attribute name="showMissing" type="xsd:boolean" use="optional" default="true"/>
    <xsd:attribute name="crossFilter" type="ST_SlicerCacheCrossFilter" use="optional"
default="showItemsWithDataAtTop"/>
  </xsd:complexType>
  <xsd:complexType name="CT_TabularSlicerCacheItems">
    <xsd:sequence>
      <xsd:element name="i" type="CT_TabularSlicerCacheItem" minOccurs="1"
maxOccurs="unbounded"/>
    </xsd:sequence>
    <xsd:attribute name="count" type="xsd:unsignedInt" use="optional"/>
  </xsd:complexType>
  <xsd:complexType name="CT_TabularSlicerCacheItem">
    <xsd:attribute name="x" type="xsd:unsignedInt" use="required"/>
```

```
    <xsd:attribute name="s" type="xsd:boolean" use="optional" default="false"/>
    <xsd:attribute name="nd" type="xsd:boolean" use="optional" default="false"/>
  </xsd:complexType>
</xsd:schema>
```

5.4 http://schemas.microsoft.com/office/drawing/2010/slicer

```
<xsd:schema elementFormDefault="qualified"
targetNamespace="http://schemas.microsoft.com/office/drawing/2010/slicer"
xmlns="http://schemas.microsoft.com/office/drawing/2010/slicer"
xmlns:a="http://schemas.openxmlformats.org/drawingml/2006/main"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <xsd:import namespace="http://schemas.openxmlformats.org/drawingml/2006/main"
schemaLocation="dml-main.xsd"/>
  <xsd:complexType name="CT_Slicer">
    <xsd:sequence>
      <xsd:element name="extLst" type="a:CT_OfficeArtExtensionList" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string" use="required"/>
  </xsd:complexType>
  <xsd:element name="slicer" type="CT_Slicer"/>
</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 released service packs:

- Microsoft® Office Excel® 2007
- Microsoft® Excel® 2010

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 2.1.4: Office Excel 2007 preserves but does not support this part.

<2> Section 2.1.5: Office Excel 2007 preserves but does not support this part.

<3> Section 2.2.2.2: Office Excel 2007 formulas can save files with a formula that uses the range-operator production rule.

<4> Section 2.2.2.3: Office Excel 2007 formulas can save files with a formula that uses the range-operator production rule.

<5> Section 2.6.1: Excel 2010 does not save elements of this type on a **macro sheet**.

<6> Section 2.6.3: Office Excel 2007 and Excel 2010 do not always write the correct value into this field. Although the value of this field is validated on load, it is not used at run time.

<7> Section 2.6.3: Office Excel 2007 and Excel 2010 do not always write the correct value into this field. Although the value of this field is validated on load, it is not used at run time.

<8> Section 2.6.10: The following table shows the different versions of function accuracy that Excel 2010 supports.

Value	Meaning
0	Functions are calculated using the current application's algorithms.
1	Functions are calculated using algorithms implemented in Office Excel 2007.
2	Functions are calculated using algorithms implemented in Excel 2010.

<9> Section 2.6.24: Office Excel 2007 does not support multiple uses of the same OLAP measure in one cache hierarchy, and does not discard the associated cache hierarchy when **ignore** is TRUE.

<10> Section 2.6.25: Office Excel 2007 will not ignore the **fld** attribute of the ancestor **CT_Datafield** ([ISO/IEC-29500-4] section A.2).

<11> Section 2.6.30: Office Excel 2007 does not ignore these complex types.

<12> Section 2.6.31: Office Excel 2007 does not support multiple uses of the same OLAP measure in one PivotTable view, and does not ignore this pivot field when **ignore** is TRUE.

<13> Section 2.6.34: the 2007 Office system does not load a file in which this field contains a value that it does not recognize, or is not recognized by the underlying operating system. the 2007 Office system recognizes the following language tags.

Language	Locale	Language tag
Afrikaans	South Africa	af-ZA
Albanian	Albania	sq-AL
Alsatian	France	gsw-FR
Amharic	Ethiopia	am-ET
Arabic	Algeria	ar-DZ
Arabic	Kingdom of Bahrain	ar-BH
Arabic	Egypt	ar-EG
Arabic	Iraq	ar-IQ
Arabic	Jordan	ar-JO
Arabic	Kuwait	ar-KW
Arabic	Lebanon	ar-LB
Arabic	Libya	ar-LY
Arabic	Morocco	ar-MA
Arabic	Oman	ar-OM
Arabic	Qatar	ar-QA
Arabic	Saudi Arabia	ar-SA
Arabic	Syria	ar-SY
Arabic	Tunisia	ar-TN
Arabic	U.A.E.	ar-AE
Arabic	Yemen	ar-YE
Armenian	Armenia	hy-AM
Assamese	India	as-IN
Azeri (Cyrillic)	Azerbaijan	az-AZ-Cyrl
Azeri (Latin)	Azerbaijan	az-AZ-Latn
Bashkir	Russia	ba-RU
Basque	Basque (Basque)	eu-ES

Language	Locale	Language tag
Belarusian	Belarus	be-BY
Bengali	Bangladesh	bn-BD
Bengali (Bengali Script)	India	bn-IN
Bosnian (Cyrillic)	Bosnia and Herzegovina	bs-BA-Cyrl
Bosnian (Latin)	Bosnia and Herzegovina	bs-BA-Latn
Breton	France	br-FR
Bulgarian	Bulgaria	bg-BG
Catalan	Catalan	ca-ES
Chinese	Hong Kong SAR	zh-HK
Chinese	Macao SAR	zh-MO
Chinese	PRC	zh-CN
Chinese	Singapore	zh-SG
Chinese	Taiwan	zh-TW
Corsican	France	co-FR
Croatian	Croatia	hr-HR
Croatian (Latin)	Bosnia and Herzegovina	hr-BA-Latn
Czech	Czech Republic	cs-CZ
Danish	Denmark	da-DK
Dari	Afghanistan	prs-AF
Divehi	Maldives	div-MV
Dutch	Belgium	nl-BE
Dutch	Netherlands	nl-NL
English	Australia	en-AU
English	Belize	en-BZ
English	Canada	en-CA
English	Caribbean	en-CB
English	India	en-IN
English	Ireland	en-IE
English	Jamaica	en-JM
English	Malaysia	en-MY

Language	Locale	Language tag
English	New Zealand	en-NZ
English	Philippines	en-PH
English	South Africa	en-ZA
English	Trinidad	en-TT
English	United Kingdom	en-GB
English	United States	en-US
English	Zimbabwe	en-ZW
Estonian	Estonia	et-EE
Faroese	Faroe Islands	fo-FO
Filipino	Philippines	fil-PH
Finnish	Finland	fi-FI
French	Belgium	fr-BE
French	Canada	fr-CA
French	France	fr-FR
French	Luxembourg	fr-LU
French	Monaco	fr-MC
French	Switzerland	fr-CH
Frisian	Netherlands	fy-NL
Galician	Galicia	gl-ES
Georgian	Georgia	ka-GE
German	Austria	de-AT
German	Germany	de-DE
German	Liechtenstein	de-LI
German	Luxembourg	de-LU
German	Switzerland	de-CH
Greek	Greece	el-GR
Greenlandic	Greenland	kl-GL
Gujarati (Gujarati Script)	India	gu-IN
Hausa (Latin)	Nigeria	ha-NG-Latn
Hebrew	Israel	he-IL

Language	Locale	Language tag
Hindi	India	hi-IN
Hungarian	Hungary	hu-HU
Icelandic	Iceland	is-IS
Igbo	Nigeria	ig-NG
Inari Sami	Finland	smn-FI
Indonesian	Indonesia	id-ID
Inuktitut (Latin)	Canada	iu-CA-Latn
Inuktitut (Syllabics)	Canada	iu-CA-Cans
Irish	Ireland	ga-IE
isiXhosa / Xhosa	South Africa	xh-ZA
isiZulu / Zulu	South Africa	zu-ZA
Italian	Italy	it-IT
Italian	Switzerland	it-CH
Japanese	Japan	ja-JP
Kannada (Kannada Script)	India	kn-IN
Kazakh	Kazakhstan	kk-KZ
Khmer	Cambodia	kh-KH
K'iche	Guatemala	qut-GT
Kinyarwanda	Rwanda	rw-RW
Konkani	India	kok-IN
Korean	Korea	ko-KR
Kyrgyz	Kyrgyzstan	ky-KG
Lao	Lao PDR	lo-LA
Latvian	Latvia	lv-LV
Lithuanian	Lithuania	lt-LT
Lower Sorbian	Germany	wee-DE
Lule Sami	Norway	smj-NO
Lule Sami	Sweden	smj-SE
Luxembourgish	Luxembourg	lb-LU
Macedonian (F.Y.R.O. Macedonia)	Former Yugoslav Republic of Macedonia	mk-MK

Language	Locale	Language tag
Malay	Brunei	ms-BN
Malay	Malaysia	ms-MY
Malayalam (Malayalam Script)	India	ml-IN
Maltese	Malta	mt-MT
Maori	New Zealand	mi-NZ
Mapudungun	Chile	arn-CL
Marathi	India	mr-IN
Mohawk	Mohawk	moh-CA
Mongolian (Cyrillic)	Mongolia	mn-MN
Mongolian (Mongolian)	PRC	mn-CN-Mong
Nepali	Federal Democratic Republic of Nepal	ne-NP
Northern Sami	Finland	se-FI
Northern Sami	Norway	se-NO
Northern Sami	Sweden	se-SE
Norwegian (Bokmål)	Norway	nb-NO
Norwegian (Nynorsk)	Norway	nn-NO
Occitan	France	oc-FR
Oriya (Oriya Script)	India	or-IN
Pashto	Afghanistan	ps-AF
Persian	Iran	fa-IR
Polish	Poland	pl-PL
Portuguese	Brazil	pt-BR
Portuguese	Portugal	pt-PT
Punjabi (Gurmukhi Script)	India	pa-IN
Quechua	Bolivia	quz-BO
Quechua	Ecuador	quz-EC
Quechua	Peru	quz-PE
Romanian	Romania	ro-RO
Romansh	Switzerland	rm-CH
Russian	Russia	ru-RU

Language	Locale	Language tag
Sanskrit	India	sa-IN
Serbian (Cyrillic)	Bosnia and Herzegovina	sr-BA-Cyrl
Serbian (Cyrillic)	Serbia	sr-SP-Cyrl
Serbian (Latin)	Bosnia and Herzegovina	sr-BA-Latn
Serbian (Latin)	Serbia	sr-SP-Latn
Sesotho sa Leboa / Northern Sotho	South Africa	ns-ZA
Setswana / Tswana	South Africa	tn-ZA
Sinhala	Sri Lanka	si-LK
Skolt Sami	Finland	sms-FI
Slovak	Slovakia	sk-SK
Slovenian	Slovenia	sl-SI
Southern Sami	Norway	sma-NO
Southern Sami	Sweden	sma-SE
Spanish	Argentina	es-AR
Spanish	Bolivia	es-BO
Spanish	Chile	es-CL
Spanish	Columbia	es-CO
Spanish	Costa Rica	es-CR
Spanish	Dominican Republic	es-DO
Spanish	Ecuador	es-EC
Spanish	El Salvador	es-SV
Spanish	Guatemala	es-GT
Spanish	Honduras	es-HN
Spanish	Mexico	es-MX
Spanish	Nicaragua	es-NI
Spanish	Panama	es-PA
Spanish	Paraguay	es-PY
Spanish	Peru	es-PE
Spanish	Commonwealth of Puerto Rico	es-PR
Spanish	Spain	es-ES

Language	Locale	Language tag
Spanish	United States	es-US
Spanish	Uruguay	es-UY
Spanish	Venezuela	es-VE
Swahili	Kenya	sw-KE
Swedish	Finland	sv-FI
Swedish	Sweden	sv-SE
Syriac	Syria	syr-SY
Tajik (Cyrillic)	Tajikistan	tg-TJ-Cyrl
Tamazight (Latin)	Algeria	tmz-DZ-Latn
Tamil	India	ta-IN
Tatar	Russia	tt-RU
Telugu (Telugu Script)	India	te-IN
Thai	Thailand	th-TH
Bhutanese	Bhutan	bo-BT
Tibetan	PRC	bo-CN
Turkish	Turkey	tr-TR
Turkmen	Turkmenistan	tk-TM
Uighur	PRC	ug-CN
Ukrainian	Ukraine	uk-UA
Upper Sorbian	Germany	wen-DE
Urdu	Pakistan	ur-PK
Uzbek (Cyrillic)	Uzbekistan	uz-UZ-Cyrl
Uzbek (Latin)	Uzbekistan	uz-UZ-Latn
Vietnamese	Viet Nam	vi-VN
Welsh	United Kingdom	cy-GB
Wolof	Senegal	wo-SN
Sakha	Russia	sah-RU
Yi	PRC	ii-CN
Yoruba	Nigeria	yo-NG

<14> Section 2.6.47: Office Excel 2007 does not ignore the ancestor **CT_PivotHierarchy** element.

<15> Section 2.6.48: Office Excel 2007 does not ignore the ancestor **CT_CacheField** element.

<16> Section 2.6.63: Excel 2010 requires that the corresponding **ListItem** ([ISO/IEC-29500-4] section 14.4.2.36) be present.

<17> Section 2.6.65: Excel 2010 loads and roundtrips this value for scroll bars and spin boxes, but it does not support its functionality.

<18> Section 2.6.65: Excel 2010 requires that the corresponding **FmlaRange** ([ISO/IEC-29500-4] section 14.4.2.29) be present.

<19> Section 2.6.65: Excel 2010 loads and roundtrips this value, but it only support its functionality for scroll bar form controls when run in a dialog box .

<20> Section 2.7.16: Excel 2010 uses this value only when the drop-down control is run in a dialog box, in all other cases the drop-down control behaves as a standard combo box.

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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