

Standard Structure Attribute Owners

Owner (O) value	Version	Description															
ARIA-1.1	2.0	Additional attributes governing translation to WAI-ARIA version 1.1															
Artifact	2.0	Attributes governing Artifact structure elements															
CSS-1	1.4	Additional attributes governing translation to CSS level 1															
CSS-2	1.4	Additional attributes governing translation to CSS level 2, revision 1															
CSS-3	2.0	Additional attributes governing translation to CSS level 3															
HTML-3.20	1.4	Additional attributes governing translation to HTML version 3.20															
HTML-4.01	1.4	Additional attributes governing translation to HTML version 4.0															
HTML-5.00	2.0	Additional attributes governing translation to HTML version 5.0															
Layout	1.4	Attributes governing the layout of content															
List	1.4	Attributes governing the numbering of lists															
NSO	2.0	Attributes defined by object's NSO entry to a namespace dictionary. NS key must also be present.															
OEB-1.00	1.4	Additional attributes governing translation to OEB (Open eBook) version 1.0															
PrintField	1.7	Attributes governing Form structure elements for non-interactive form fields															
RDFa-1.10	2.0	Additional attributes governing translation to RDFa version 1.1															
RTF-1.05	1.4	Additional attributes governing translation to Microsoft Rich Text Format version 1.05															
Table	1.4	Attributes governing the organisation of cells in tables															
UserProperties	1.6	User property attributes defined by a User Property dictionary: <table border="1"> <thead> <tr> <th>Key</th> <th>Type</th> <th>Value / Description</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>text string</td> <td><i>Required</i> Name of the user property.</td> </tr> <tr> <td>V</td> <td>any</td> <td><i>Required</i> Value of the user property. Use text string, number, or booleans for portability.</td> </tr> <tr> <td>F</td> <td>text string</td> <td><i>Optional</i> Formatted representation of V entry.</td> </tr> <tr> <td>H</td> <td>boolean</td> <td><i>Optional</i> Hidden if true. Default = false</td> </tr> </tbody> </table> <p>See Table 362 in ISO 32000-2:2020.</p>	Key	Type	Value / Description	N	text string	<i>Required</i> Name of the user property.	V	any	<i>Required</i> Value of the user property. Use text string, number, or booleans for portability.	F	text string	<i>Optional</i> Formatted representation of V entry.	H	boolean	<i>Optional</i> Hidden if true . Default = false
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XML-1.00	PDF 1.4	Additional attributes governing translation to XML, version 1.00															

See Table 360 and Table 376 in ISO 32000-2:2020 including resolved errata at <https://pdf-issues.pdfa.org>.

Marked Content Tags

PDF Feature	Tag	Examples, with / without Property List dictionaries
Artifacts (PDF 1.4, §14.8.2.2.2)	Artifact	<code>/Artifact BMC ... EMC</code> <code>/Artifact << /Type /Page /Subtype /Page /BBox [0 0 100 100] /Attached [/Bottom] >> BDC ... EMC</code>
Variable text field replacement (PDF 1.2, §12.7.4.3)	Tx	<code>/Tx BDC</code> <code>% content to be replaced when updating</code> <code>% appearance stream for new field value</code> <code>EMC</code>

PDF Feature	Tag	Examples, with / without Property List dictionaries
Associated Files (PDF 2.0, §14.13.5)	AF	Always done via named resource in the Resources dictionary: <code><<</code> <code>/XObject << /Img1 8 0 R ... >></code> <code>/Properties <<</code> <code> /Img1AF << /MCAF [</code> <code> <</Type/Filespec /AFRelationship/Data /EF ...>></code> <code> <</Type/Filespec /AFRelationship/Schema /EF...>></code> <code>] >></code> <code>>></code> <code>>></code> In a content stream: <code>/AF /Img1AF BDC % Associate 2 files with image</code> <code>/Img1 Do</code> EMC Cannot be done via Property List dictionary in content streams.
Optional Content (PDF 1.5, §8.11.3.2)	OC	In the Resources dictionary: <code><<</code> <code> /Properties << /OCG1 10 0 R ... >></code> <code> ...</code> <code>>></code> In a content stream: <code>/OC /OCG1 BDC</code> <code>1 0 0 rg</code> <code>4 w</code> <code>100 100 412 592 re s</code> EMC
Reverse order show strings (PDF 1.4, §14.8.2.5.3)	ReversedChars	<code>/ReversedChars BMC % "Hello world" reversed</code> <code>(olleH) Tj</code> <code>-200 0 Td</code> <code>(.dlrow) Tj</code> EMC
Alternate description (PDF 1.5, §14.9.3)	Span	<code>/Span << /Lang (en-us)</code> <code> /Alt (six-point star)</code> <code>>> BDC</code> <code>(A) Tj</code> EMC
Expansion of abbreviations and acronyms (PDF 1.5, §14.9.5)	Span	BT <code>/Span << /E (Doctor) >> BDC (Dr.) Tj</code> EMC <code>(Healwell works at 123 Industrial) Tj</code> <code>/Span << /E (Drive) >> BDC (Dr.) Tj</code> EMC ET
Replacement text (PDF 1.4, §14.9.4)	Span	<code>/Span << /ActualText (Missing) >> BDC</code> <code>(Missing) Tj</code> EMC <code>44 0 Td % simulate space by moving insert point</code> <code>(space) Tj</code>

All references to ISO 32000-2:2020 including resolved errata at <https://pdf-issues.pdfa.org>.

PDF Association Cheat Sheet – Logical Structure

Structure Tree Root

Key	Type(s)	Version	Description (optional unless stated otherwise)
AF	array	2.0	Associated Files
ClassMap	dictionary	1.3	Maps name objects designating attribute classes to the corresponding attribute objects or arrays of attribute objects.
IDTree	name-tree	1.3	Required if any structure elements have element identifiers (structure element dictionary ID key). Maps element identifiers (ID key) to the structure elements they denote.
K	array dictionary	1.3	The immediate child or children structure elements of the structure tree root in the structure hierarchy. Must be a Document structure element.
Namespaces	array	2.0	Array of all namespaces used in the PDF
ParentTree	number-tree	1.3	Required if any structure element contains content items. Used to find structure elements to which content items belong. Each integer key in the number tree corresponds to a single page of the document, or to an individual object (such as an annotation or an XObject) that is a content item in its own right and that is the value of the StructParent or StructParents entry in that object. The form of the associated value depends on the nature of the object: <ul style="list-style-type: none"> For an object that is a content item in its own right, the value is the indirect reference to the object's parent element (the structure element that contains it as a content item). For a page object or content stream containing marked-content sequences that are content items, the value is an array of references to the parent elements of those marked-content sequences.
ParentTreeNextKey	integer	1.3	An integer greater than any key in ParentTree . Used as the key for the next entry added to ParentTree .
PronunciationLexicon	array	2.0	An array of file specification dictionaries for XML pronunciation lexicons conforming to Pronunciation Lexicon Specification (PLS) Version 1.0. Where two or more pronunciation lexicons apply to the same text, the first match in array order is used.
RoleMap	dictionary	1.3	Maps name objects designating names of structure types used in the document to a name object designating the name of their approximate equivalents in the set of standard structure types.
Type	name	1.3	Required . Must be <code>StructTreeRoot</code>

See Table 354 in ISO 32000-2:2020 including resolved errata at <https://pdf-issues.pdfa.org>

Structure Elements

Key	Type(s)	Version	Description (optional unless stated otherwise)
A	array dictionary stream	1.3	Attribute object(s) associated with this structure element. Array form may also have integer revisions.
ActualText	text string	1.4	Text that is an exact replacement for the content enclosed by the structure element and its children.
AF	array	2.0	Associated Files
Alt	text string	1.3	Alternative description of the structure element and its children in human-readable form.
C	array name	1.3	Attribute class name(s) associated with this structure element. Array form may also have integer revisions. If both A and C entries are present and a given attribute is specified by both, the A entry takes precedence.
E	text string	1.5	Expanded form of an abbreviation or an acronym.
ID	byte string	1.3	The element identifier, unique in the document's structure hierarchy. The IDTree entry in the structure tree root defines mapping between element identifiers and the structure elements they denote.
K	array dictionary integer	1.3	Child structure element(s) of this structure element: <ul style="list-style-type: none"> Other structure element dictionaries. Marked-content identifier (integer). A marked-content reference (MCR) dictionary. An object reference dictionary (OBJR).
Lang	text string	1.4	Natural language identifier for all text in the structure element, except where overridden by language specifications for nested structure elements or marked content. e.g. (en-US)
Metadata	stream	1.4	XMP metadata stream
NS	dictionary	2.0	Indirect reference of a namespace dictionary and listed in Namespaces entry of structure tree root.
P	dictionary	1.3	Required . Indirect reference to parent structure element or the structure tree root.
Pg	dictionary	1.3	Required if K is an integer object or an array containing integer objects, otherwise optional. Must be an indirect reference to a page object.
Phoneme	text string	2.0	Exact replacement for content enclosed by the structure element and its children. Interpreted based on the PhoneticAlphabet property in effect.
PhoneticAlphabet	name	2.0	ipa (default), x-sampa, zh-Latn-pinyin, or zh-Latn-wadegile
R (deprecated in PDF 2.0)	integer	1.3	Revision number. ≥ 0 . Default = 0.
Ref	array	2.0	Identifies structure element(s) to which the item of content, contained within this structure element refers (e.g. footnotes, endnotes, sidebars, etc.). No null elements.
S	name	1.3	Required . The structure type.
T	text string	1.3	Human-readable title of the specific structure element.
Type	name	1.3	Optional. Must be <code>StructElem</code>

See Table 355 in ISO 32000-2:2020 including resolved errata at <https://pdf-issues.pdfa.org>