

# The `accsupp` package

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## Abstract

Since PDF 1.5 portions of a page can be marked for better accessibility support. For example, replacement texts or expansions of abbreviations can be provided. Package `accsupp` starts with providing a minimal low-level interface for programmers. Status is experimental.

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# 1 Documentation

## 1.1 Macros

Section “10.8 Accessibility Support” of the PDF reference [1] lists some features that can be added by operators for marked content.

`\BeginAccSupp {<options>}`

It puts the operator BDC in the page stream:

```

/Span
<<...>>    % property dictionary
BDC

```

The contents of the dictionary is controlled by *<options>*. See sections 1.1.1 and 1.1.2.

`\EndAccSupp {<options>}`

It puts the operator EMC in the page stream. The only option is `pdfliteral`, see section 1.2.1.

**Note:** The caller is responsible for the placement of `\BeginAccSupp` and `\EndAccSupp` pairs. Especially page breaks are not allowed in between.

### 1.1.1 Feature options

The PDF reference [1] describes and explains the different features. The names of the feature options are the same as the key names for the property dictionary for operator BDC, see `\BeginAccSupp`.

**ActualText:** Provides a replacement text, see examples in section 2.

**Alt:** Provides an alternate description.

**E:** Provides the expansion of an abbreviation or an acronym.

**Lang:** Specifies the language.

### 1.1.2 Input methods

Except for `Lang` option `method` controls how the argument for `ActualText`, `Alt`, and `E` are interpreted.

**method=plain:** The string is only expanded and written without further treatment. Special characters are not protected, thus this method may result in an invalid PDF file.

**method=escape:** The string is expanded and special characters are escaped. The result is a valid PDF string.

**method=hex:** The string is given in hexadecimal notation. Section 2.1 shows an example.

**method=pdfstringdef:** If package `hyperref` is loaded, then its `\pdfstringdef` is used. This method is slow, but useful if the string contains arbitrary  $\TeX$  code.

**unicode:** This option is needed, if the string is given as Unicode string (16 bit). Internally it adds the string prefix for Unicode. In case of `method=pdfstringdef` it passes the option to `\hypersetup`.

## 1.2 Driver options

Driver options are package options only. The special  $\TeX$  compilers `pdf $\TeX$`  and `Xe $\TeX$`  are detected automatically. The default for unrecognized drivers can be set by defining `\ActualTextDriverDefault`. This can be done in the configuration file `accsupp.cfg`.

### 1.2.1 Option `pdftex`

Package option `pdftex` is used for `pdf $\TeX$`  in PDF mode. Additionally `\BeginAccSupp` and `\EndAccSupp` understand option `pdfliteral`. It controls the modifier keyword for `\pdfliteral`:

```
pdfliteral=direct  $\Rightarrow$  \pdfliteral direct{...}
```

### 1.2.2 Option `dvipdfm`

Package option `dvipdfm` and its aliases `dvipdfmx` `xetex` are used for drivers that support `dvipdfm` specials.

### 1.2.3 Option `dvips`

Package option `dvips` and its alias `dvipsone` write `pdfmark` specials in the output. Unhappily these `pdfmark` operators are ignored by `ghostscript` (latest tested version is 8.54). Perhaps they are recognized by commercial distiller applications.

### 1.2.4 Turning off page stream compression

For debugging it is useful to have uncompressed page stream objects. This can be done afterwards via `pdftk`:

```
pdftk file.pdf output file-uncompressed.pdf uncompress
```

Or the PDF file is generated uncompressed:

```
pdf $\TeX$ : \pdfcompresslevel=0
```

```
dvipdfm: dvipdfm -z0 ...
```

```
dvipdfmx: dvipdfmx -z0 ...
```

```
ghostscript/ps2pdf: ps2pdf -dCompressPages=false input.ps output.pdf
```

## 2 Example

### 2.1 Example `\notparallel`

```
1 (*example1)
2 %<<END
3 \documentclass{article}
4 \usepackage{accsupp}[2007/11/14]
5 \usepackage{centernot}
6 % U+2226 NOT PARALLEL
7 % \mathrel{...} prevents page break in between
```

```

8 \newcommand*{\notparallel}{%
9   \ensuremath{%
10     \mathrel{%
11       \BeginAccSupp{method=hex,unicode,ActualText=2226}%
12       \centernot{\parallel}%
13       \EndAccSupp{}}%
14     }%
15   }%
16 }
17 \begin{document}
18 \begin{equation}
19 A\notparallel B
20 \end{equation}
21 \end{document}
22 %END
23 </example1>

```

## 2.2 Example with pdfstringdef

```

24 <*example2>
25 %<<END
26 \documentclass{article}
27 \usepackage[unicode]{hyperref}
28 \usepackage{accsupp}[2007/11/14]
29 \begin{document}
30   \begin{equation}
31     \BeginAccSupp{
32       method=pdfstringdef,
33       unicode,
34       ActualText={%
35         a\texttt{two}superior +b\texttt{two}superior
36         =c\texttt{two}superior
37       }
38     }
39     a^2 + b^2 = c^2
40   \EndAccSupp{}
41 \end{equation}
42 \end{document}
43 %END
44 </example2>

```

## 3 Implementation

### 3.1 Package

```

45 <*package>
46 \begingroup
47   \catcode123 1 % {
48   \catcode125 2 % }
49   \def\x{\endgroup
50     \expandafter\edef\csname ACCSUPP@AtEnd\endcsname{%
51       \catcode35 \the\catcode35\relax
52       \catcode64 \the\catcode64\relax
53       \catcode123 \the\catcode123\relax
54       \catcode125 \the\catcode125\relax
55     }%
56   }%
57 \x
58 \catcode35 6 % #
59 \catcode64 11 % @
60 \catcode123 1 % {
61 \catcode125 2 % }

```

```

62 \def\TMP@EnsureCode#1#2{%
63   \edef\ACCSUPP@AtEnd{%
64     \ACCSUPP@AtEnd
65     \catcode#1 \the\catcode#1\relax
66   }%
67   \catcode#1 #2\relax
68 }
69 \TMP@EnsureCode{10}{12}% ^^J
70 \TMP@EnsureCode{33}{12}% !
71 \TMP@EnsureCode{39}{12}% '
72 \TMP@EnsureCode{40}{12}% (
73 \TMP@EnsureCode{41}{12}% )
74 \TMP@EnsureCode{42}{12}% *
75 \TMP@EnsureCode{44}{12}% ,
76 \TMP@EnsureCode{45}{12}% -
77 \TMP@EnsureCode{46}{12}% .
78 \TMP@EnsureCode{47}{12}% /
79 \TMP@EnsureCode{58}{12}% :
80 \TMP@EnsureCode{60}{12}% <
81 \TMP@EnsureCode{61}{12}% =
82 \TMP@EnsureCode{62}{12}% >
83 \TMP@EnsureCode{94}{7}% ^ (superscript)
84 \TMP@EnsureCode{96}{12}% '
85 \TMP@EnsureCode{254}{12}% ^^fe
86 \TMP@EnsureCode{255}{12}% ^^ff
87 \g@addto@macro\ACCSUPP@AtEnd{\endinput}

Package identification.
88 \NeedsTeXFormat{LaTeX2e}
89 \ProvidesPackage{accsupp}%
90   [2007/11/14 v0.2 Accessibility support by marked content (H0)]
91 \RequirePackage{pdfescape}[2007/02/25]
92 \RequirePackage{ifpdf}
93 \RequirePackage{ifxetex}
94 \RequirePackage{kvoptions}

95 \SetupKeyvalOptions{%
96   family=ACCSUPP,%
97   prefix=ACCSUPP%
98 }

```

## 3.2 Driver detection and setup

### Driver declarations.

```

99 \def\ACCSUPP@DefineDriverKey{%
100   \@dblarg\ACCSUPP@@DefineDriverKey
101 }
102 \def\ACCSUPP@@DefineDriverKey[#1]#2{%
103   \define@key{ACCSUPP}{#2}[]{%
104     \def\ACCSUPP@driver{#1}%
105   }%
106   \g@addto@macro\ACCSUPP@DisableOptions{%
107     \DisableKeyvalOption{ACCSUPP}{#2}%
108   }%
109 }
110 \let\ACCSUPP@DisableOptions\@empty
111 \ACCSUPP@DefineDriverKey{pdftex}
112 \ACCSUPP@DefineDriverKey{dvips}
113 \ACCSUPP@DefineDriverKey[dvips]{dvipsone}
114 \ACCSUPP@DefineDriverKey{dvipdfm}
115 \ACCSUPP@DefineDriverKey[dvipdfm]{dvipdfmx}
116 \ACCSUPP@DefineDriverKey[dvipdfm]{xetex}
117 \let\ACCSUPP@driver\relax
118 \InputIfFileExists{accsupp.cfg}{}{}

```

```

119 \providecommand*{\ActualTextDriverDefault}{dvips}
120 \ifpdf
121   \def\ACCSUPP@driver{pdftex}%
122 \else
123   \ifxetex
124     \def\ACCSUPP@driver{dvipdfm}%
125   \else
126     \ifx\ACCSUPP@driver\relax
127       \let\ACCSUPP@driver\ActualTextDriverDefault
128     \fi
129   \fi
130 \fi

```

### Process options.

```

131 \ProcessKeyvalOptions*
132 \ACCSUPP@DisableOptions

```

### Driver validation and loading.

```

133 \def\ACCSUPP@temp{pdftex}%
134 \ifpdf
135   \ifx\ACCSUPP@temp\ACCSUPP@driver
136   \else
137     \PackageWarningNoLine{accsupp}{%
138       Wrong driver '\ACCSUPP@driver', using 'pdftex' instead%
139     }%
140     \let\ACCSUPP@driver\ACCSUPP@temp
141   \fi
142 \else
143   \ifx\ACCSUPP@temp\ACCSUPP@driver
144     \PackageError{accsupp}{%
145       Wrong driver, pdfTeX is not running in PDF mode.\MessageBreak
146       Package loading is aborted%
147     }\@ehc
148     \expandafter\expandafter\expandafter\ACCSUPP@AtEnd
149   \fi
150   \def\ACCSUPP@temp{dvipdfm}%
151   \ifxetex
152     \ifx\ACCSUPP@temp\ACCSUPP@driver
153     \else
154       \PackageWarningNoLine{accsupp}{%
155         Wrong driver '\ACCSUPP@driver',\MessageBreak
156         using 'dvipdfm' for XeTeX instead%
157       }%
158       \let\ACCSUPP@driver\ACCSUPP@temp
159     \fi
160   \fi
161 \fi
162 \ifx\ACCSUPP@driver\relax
163   \PackageError{accsupp}{%
164     Missing driver option.\MessageBreak
165     Package loading is aborted%
166   }\@ehc
167   \expandafter\ACCSUPP@AtEnd
168 \fi
169 \InputIfFileExists{accsupp-\ACCSUPP@driver.def}{\}{%
170   \PackageError{accsupp}{%
171     Unsupported driver '\ACCSUPP@driver'.\MessageBreak
172     Package loading is aborted%
173   }\@ehc
174   \ACCSUPP@AtEnd
175 }

```

### 3.3 Main macro

```

176 \DeclareBoolOption{unicode}
177 \DeclareStringOption[page]{pdfliteral}
178 \DeclareStringOption{Lang}
179 \def\ACCSUPP@method{escape}
180 \define@key{ACCSUPP}{method}{%
181   \ifundefined{ACCSUPP@method@#1}{%
182     \PackageError{accsupp}{%
183       Ignoring unknown method ‘#1’%
184     }\@ehc
185   }{%
186     \edef\ACCSUPP@method{#1}%
187   }%
188 }
189 \let\ACCSUPP@Lang\relax
190 \def\ACCSUPP@temp#1{%
191   \expandafter\ACCSUPP@@temp\csname ACCSUPP@#1\endcsname{#1}%
192 }
193 \def\ACCSUPP@@temp#1#2{%
194   \let#1\relax
195   \define@key{ACCSUPP}{#2}{%
196     \def#1{##1}%
197     \ifx#1\@empty
198       \def#1{()}%
199     \else
200       \csname ACCSUPP@method@\ACCSUPP@method\endcsname#1%
201     \fi
202   }%
203 }
204 \ACCSUPP@temp{Alt}
205 \ACCSUPP@temp{ActualText}
206 \ACCSUPP@temp{E}
207 \newcommand*{\BeginAccSupp}[1]{%
208   \begingroup
209   \setkeys{ACCSUPP}{#1}%
210   \edef\ACCSUPP@span{%
211     /Span<%
212     \ifx\ACCSUPP@Lang\relax
213     \else
214       /Lang\ACCSUPP@Lang
215     \fi
216     \ifx\ACCSUPP@Alt\relax
217     \else
218       /Alt\ACCSUPP@Alt
219     \fi
220     \ifx\ACCSUPP@ActualText\relax
221     \else
222       /ActualText\ACCSUPP@ActualText
223     \fi
224     \ifx\ACCSUPP@E\relax
225     \else
226       /E\ACCSUPP@E
227     \fi
228     >>%
229   }%
230   \ACCSUPP@bdc
231 \endgroup
232 }
233 \newcommand*{\EndAccSupp}[1]{%
234   \begingroup
235   \setkeys{ACCSUPP}{#1}%
236   \ACCSUPP@emc

```

```

237 \endgroup
238 }

```

### 3.3.1 Input methods

```

239 \def\ACCSUPP@method@plain#1{%
240   \csname @safe@activestrue\endcsname
241   \edef#1{%
242     (
243     \ifACCSUPP@unicode
244       \string\376\string\377%
245     \fi
246     #1%
247   )%
248 }%
249 \@onelevel@sanitize#1%
250 }

251 \def\ACCSUPP@method@escape#1{%
252   \EdefEscapeString#1{%
253     \ifACCSUPP@unicode
254       ^^fe^^ff%
255     \fi
256     #1%
257   }%
258   \edef#1{(#1)}%
259 }%

260 \def\ACCSUPP@method@hex#1{%
261   \edef#1{%
262     <%
263     \ifACCSUPP@unicode
264       FFFF%
265     \fi
266     #1%
267     >%
268   }%
269 }

270 \def\ACCSUPP@method@pdfstringdef#1{%
271   \ifACCSUPP@unicode
272     \@ifundefined{hypersetup}{-}{%
273       \hypersetup{unicode}%
274     }%
275   \fi
276   \@ifundefined{pdfstringdef}{-}{%
277     \PackageError{accsupp}{%
278       Method ‘pdfstringdef’ requires package ‘hyperref’%
279     }\@ehc
280     \let\ACCSUPP@temp\@empty
281   }{%
282     \begingroup
283     \setbox0=\hbox{%
284       \pdfstringdef\ACCSUPP@temp#1%
285       \global\let\ACCSUPP@temp\ACCSUPP@temp
286     }%
287     \endgroup
288   }%
289   \edef#1{(\ACCSUPP@temp)}%
290 }

291 \ACCSUPP@AtEnd
292 \end{package}

```



## 3.4 Drivers

### 3.4.1 Driver pdftex

```
293 <*pdftex>
294 \NeedsTeXFormat{LaTeX2e}
295 \ProvidesFile{accsupp-pdftex.def}%
296   [2007/11/14 v0.2 accsupp driver for pdfTeX (HO)]%
297 \def\ACCSUPP@bdc{%
298   \pdfliteral\ACCSUPP@pdfliteral{\ACCSUPP@span BDC}%
299 }
300 \def\ACCSUPP@emc{%
301   \pdfliteral\ACCSUPP@pdfliteral{EMC}%
302 }
303 </pdftex>
```

### 3.4.2 Driver dvipdfm

```
304 <*dvipdfm>
305 \NeedsTeXFormat{LaTeX2e}
306 \ProvidesFile{accsupp-dvipdfm.def}%
307   [2007/11/14 v0.2 accsupp driver for dvipdfm (HO)]%
308 \def\ACCSUPP@bdc{%
309   \special{pdf:content \ACCSUPP@span BDC}%
310 }
311 \def\ACCSUPP@emc{%
312   \special{pdf:content EMC}%
313 }
314 </dvipdfm>
```

### 3.4.3 Driver dvips

```
315 <*dvips>
316 \NeedsTeXFormat{LaTeX2e}
317 \ProvidesFile{accsupp-dvips.def}%
318   [2007/11/14 v0.2 accsupp driver for dvips (HO)]%
319 \def\ACCSUPP@bdc{%
320   \special{ps:[\ACCSUPP@span/BDC pdfmark}%
321 }
322 \def\ACCSUPP@emc{%
323   \special{ps:[/EMC pdfmark}%
324 }
325 </dvips>
```

## 4 Test

### 4.1 Catcode checks for loading

```
326 <*test1>
327 \NeedsTeXFormat{LaTeX2e}
328 \documentclass{minimal}
329 \makeatletter
330 \def\RestoreCatcodes{}
331 \count@=0 %
332 \loop
333   \edef\RestoreCatcodes{%
334     \RestoreCatcodes
335     \catcode\the\count@=\the\catcode\count@\relax
336   }%
337 \ifnum\count@<255 %
338   \advance\count@\@ne
339 \repeat
```

```

340
341 \def\RangeCatcodeInvalid#1#2{%
342   \count@=#1\relax
343   \loop
344     \catcode\count@=15 %
345     \ifnum\count@<#2\relax
346       \advance\count@\@ne
347     \repeat
348 }
349 \def\Test{%
350   \RangeCatcodeInvalid{0}{47}%
351   \RangeCatcodeInvalid{58}{64}%
352   \RangeCatcodeInvalid{91}{96}%
353   \RangeCatcodeInvalid{123}{127}%
354   \catcode'\@=12 %
355   \catcode'\=0 %
356   \catcode'\{=1 %
357   \catcode'\}=2 %
358   \catcode'\#=6 %
359   \catcode'\[=12 %
360   \catcode'\]=12 %
361   \catcode'\%=14 %
362   \catcode'\ =10 %
363   \catcode13=5 %
364   \RequirePackage{accsupp}[2007/11/14]\relax
365   \RestoreCatcodes
366 }
367 \Test
368 \csname @@end\endcsname
369 \end
370 </test1>

```

## 5 Installation

### 5.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/accsupp.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/accsupp.pdf](#) Documentation.

**Bundle.** All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

*TDS* refers to the standard “A Directory Structure for  $\text{\TeX}$  Files” ([CTAN:tds/tds.pdf](#)). Directories with `texmf` in their name are usually organized this way.

### 5.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

---

<sup>1</sup><http://ftp.ctan.org/tex-archive/>

**Script installation.** Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

### 5.3 Package installation

**Unpacking.** The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain- $\TeX$ :

```
tex accsupp.dtx
```

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

|                                     |  |
|-------------------------------------|--|
| <code>accsupp.sty</code>            | → <code>tex/latex/oberdiek/accsupp.sty</code>            |
| <code>accsupp-pdftex.def</code>     | → <code>tex/latex/oberdiek/accsupp-pdftex.def</code>     |
| <code>accsupp-dvipdfm.def</code>    | → <code>tex/latex/oberdiek/accsupp-dvipdfm.def</code>    |
| <code>accsupp-dvips.def</code>      | → <code>tex/latex/oberdiek/accsupp-dvips.def</code>      |
| <code>accsupp.pdf</code>            | → <code>doc/latex/oberdiek/accsupp.pdf</code>            |
| <code>accsupp-example1.tex</code>   | → <code>doc/latex/oberdiek/accsupp-example1.tex</code>   |
| <code>accsupp-example2.tex</code>   | → <code>doc/latex/oberdiek/accsupp-example2.tex</code>   |
| <code>test/accsupp-test1.tex</code> | → <code>doc/latex/oberdiek/test/accsupp-test1.tex</code> |
| <code>accsupp.dtx</code>            | → <code>source/latex/oberdiek/accsupp.dtx</code>         |

If you have a `docstrip.cfg` that configures and enables docstrip's TDS installing feature, then some files can already be in the right place, see the documentation of docstrip.

### 5.4 Refresh file name databases

If your  $\TeX$  distribution (te $\TeX$ , mik $\TeX$ , ...) relies on file name databases, you must refresh these. For example, te $\TeX$  users run `texhash` or `mktextlsr`.

### 5.5 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk accsupp.pdf unpack_files output .
```

**Unpacking with  $\LaTeX$ .** The `.dtx` chooses its action depending on the format:

**plain- $\TeX$ :** Run docstrip and extract the files.

**$\LaTeX$ :** Generate the documentation.

If you insist on using  $\LaTeX$  for docstrip (really, docstrip does not need  $\LaTeX$ ), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{accsupp.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfL<sup>A</sup>T<sub>E</sub>X:

```
pdflatex accsupp.dtx
makeindex -s gind.ist accsupp.idx
pdflatex accsupp.dtx
makeindex -s gind.ist accsupp.idx
pdflatex accsupp.dtx
```

## 6 References

- [1] Adobe Systems Incorporated, *PDF Reference*, 6th edition, 2006. [http://www.adobe.com/devnet/acrobat/pdfs/pdf\\_reference.pdf](http://www.adobe.com/devnet/acrobat/pdfs/pdf_reference.pdf)

## 7 History

[2007/03/21 v0.1]

- First version.

[2007/11/14 v0.2]

- Various bug fixes.
- Catcode section rewritten, test added.

## 8 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

| Symbols             |                         | A                            |  |
|---------------------|-------------------------|------------------------------|--|
| \#                  | 358                     | \ACCSUPP@@DefineDriverKey    | 100, 102   |
| \%                  | 361                     | \ACCSUPP@temp                | 191, 193   |
| \@                  | 354                     | \ACCSUPP@ActualText          | 220, 222   |
| \@dblarg            | 100                     | \ACCSUPP@Alt                 | 216, 218   |
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