

Hypertext Formatting of PDF and PostScript Documents for V_TE_X

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Printed December 28, 2000

Contents

Abstract

The `pdf` package is a simple wrapper, that should help to get a nicer formatting of PDF or PostScript output. The package operates only when V_TE_X runs in a PDF or PostScript generating mode.

1 History

December 11, 1997 Initial version 0.1 [Mike Krutikov].

December 12, 1997 Added support for `\part` outlines (book class).

March 07, 1999 Included `\OpMode=2` case [MV].

March 10, 1999 Bug with `\subsubsection` fixed [AVK].

December 03, 1999 Protection against multiply defined `aname`'s added: [AVK]

April 22, 1999 optional argument (`\langle outline \rangle`) added to sectioning commands: [AVK]

December 28, 2000 Version 0.5: [AVK]

Objectives: PDF supports a *lot* of nice features like active controls, forms, outlines, etc. Michael Vulis incorporated a set of `\specials`, that comes into play when V_TE_X generates PDF or PostScript output. One interesting thing, directly addressed here, is support of PDF's outlines. Another supported PDF feature is cross-reference generation.

2 The User Interface

2.1 The Package Options

The `pdf` package can be used with normal \LaTeX 2 ϵ document by specifying `\usepackage[<package options>]{pdf}` in the document preamble.

The package works only with $\text{V}\text{\TeX}$; if you use it under another $\text{T}\text{\TeX}$, the package will complain, define dummies for user commands and quit.

Configuration of `pdf` is provided via a key=value interface. The options can be set in the optional argument of the `\usepackage` command. In the key descriptions, many options classified as *boolean* do not need a value, as they default to the value `true`. For example, `\usepackage[outline=true]{pdf}` and `\usepackage[outline]{pdf}` have the same meaning. The values `true` and `false` can always be specified for any boolean key, however.

The package provides the following options:

Key	Class	Default	
<code>outline</code>	boolean	<code>false</code>	Enable the generation of a document outline. Document outline is a tree-ordered hierarchy of bookmarks which display the document structure to the document reader. With <code>outline=true</code> the <code>pdf</code> package automatically builds the document outline equivalent to the document's table of contents.

Key	Class	Default	
<code>crossrefs</code>	boolean	<code>false</code>	Extend the functionality of \LaTeX cross-referencing commands (<code>\label</code> , <code>\ref</code> , <code>\pageref</code>) to produce hypertext links. It also provides new commands to allow writing user-defined hypertext links, including those to external documents, and launch actions as well.

Key	Class	Default	
<code>nowarnings</code>	boolean	<code>true</code>	Work in a silent mode, do not produce warnings on multiply defined pdf anchors. Normally, the <code>pdf</code> package issues a warning and ignores a multiply defined anchor.

Key	Class	Default	
<code>colorlinks</code>	boolean	<code>false</code>	By default, the <code>pdf</code> package marks hypertext links by colored link borders. Such an approach allows to create

hypertext enriched documents which look on print identically to same documents without hypertext. This is because Acrobat Reader doesn't print the borders of links. However, to emphasize the links you may want to make them colored. You can do it with `colorlinks=true` specified.

Key	Class	Default	
<code>linktextcolor</code>	color	green	Use this option to change the default text color of links to the current document anchors. The option works only when <code>colorlinks=true</code> . The value of the option is the color name specified in terms of the standard color package. For example, you do the following to change the default value <code>linktextcolor</code> :

```
\documentclass{article}
\usepackage{color}
\definecolor{mycolor}{rgb}{0.4,0.5,0.6}
\usepackage[crossrefs,outline,colorlinks,
linktextcolor=mycolor]{pdf}
```

In the same manner you can use any of the color options below.

Key	Class	Default	
<code>filetextcolor</code>	color	blue	Use this option to change the default text color of links to external files. The option works only when <code>colorlinks=true</code> .

Key	Class	Default	
<code>launchtextcolor</code>	color	cyan	Use this option to change the default text color of links to launch actions. The option works only when <code>colorlinks=true</code> .

Key	Class	Default	
<code>linkbordercolor</code>	R G B	.9 0 0	Use this option to change the default color of internal link borders. Pdf border colors accept only the RGB color model. So the pdf package will reject border specification <code>linkbordercolor=yellow</code> because yellow belongs to the CMYK color model. However, <code>linkbordercolor=red</code> (or any other RGB color) is correct.

Key	Class	Default	
<code>filebordercolor</code>	R G B	0 .9 0	Use this option to change the default color of borders of external file links. Only RGB-colors are valid.

Key	Class	Default	
<code>\launchbordercolor</code>	R G B	0 0 .9	Use this option to change the default color of borders of launch action links. Only RGB-colors are valid.

Key	Class	Default	
<code>\borderstyle</code>	Pdf line	0 0 1	Change the characteristics of the border style. The <code>pdf</code> package allows to specify the width and dash pattern for the border lines. The border is an array of three numbers mandatory numbers and an optional array. The three numbers define the horizontal corner radius, vertical corner radius, and border width. If the corner radii are 0, the border has square (not rounded) corners; if the border width is 0, no border is drawn. The optional parameter specifies the a pattern of dashes and gaps to be used in drawing the border. Line dash pattern is specified by a dash array and a dash phase. The dash array's elements are numbers that specify the lengths of alternating dashes and gaps; the dash phase specifies the distance into the dash pattern at which to start the dash. For example, <code>\borderstyle={2 3 1 [4 2]}</code> specifies a border 1 unit wide, with rounded corners (2-unit for the horizontal corner, 3-unit for the vertical corner), drawn with 4-unit dashes alternating with 2-unit gaps without dash phase. Notice tha having curly braces in the <code>\borderstyle=</code> assignment is a must; otherwise, the option list parsing would fail.

Notice that unless either `\outline` or `\crossrefs` option is specified, the `pdf` package *doesn't* use any of its hypertext capabilities.

2.2 The User Commands

<code>\nomarkhy</code>	<code>{\langle name \rangle}</code>	define the hypertext anchor with the <code>\langle name \rangle</code> .
<code>\markhy</code>	<code>{\langle text \rangle}</code>	put the hypertext anchor with the name <code>\langle text \rangle</code> over the printable text.
<code>\usehy</code>	<code>[\langle name \rangle]{\langle text \rangle}</code>	makes the hypertext link to the <code>\langle name \rangle</code> anchor with the link bounding box encompassing the <code>\langle text \rangle</code> argument. Depending on the package options the link will have a border or/and the <code>\langle text \rangle</code> will be colored.
<code>\extusehy</code>	<code>{\langle filename \rangle}{\langle destination \rangle}{\langle text \rangle}</code>	creates the hypertext link to the external file with the <code>\langle destination \rangle</code> and the link bounding box encompassing the <code>\langle text \rangle</code> argument. Depending on the package options the link will have a border or/and the <code>\langle text \rangle</code> will be colored. For example, <code>\extusehy{color.pdf}{!1}{click here}</code> creates the following link 'click here' which opens the <code>color.pdf</code> file (if such exists

on your system) on the first page. See the V_TE_X User's Guide for more details regarding the $\langle destination \rangle$ syntax.

`\launch` $\{\langle application \rangle\}[\langle parameters \rangle]\{\langle text \rangle\}$
 creates the hypertext link with the launch action which will launch external $\langle application \rangle$ with optional $\langle parameters \rangle$ to be passed to it by means of the command line. The link will be build around the $\langle text \rangle$. Depending on the package options the link will have a border or/and the $\langle text \rangle$ will be colored. For example, `\launch{notepad.exe}[newfile.txt]{launch Notepad}` will create the link launch Notepad, clicking which should launch the standard Notepad application to edit a file *newfile.txt*.

2.3 Extended Sectioning Syntax

The pdf package automatically builds the document outline with the `outline` package option enabled. In many cases this provides fine results. However, in special cases automatic scheme may fail. Consider for example the following section:

`\section{$2+2=4$?}`

The bookmark generated from this section will be literally `$2+2=4$?` because Pdf doesn't understand T_EX syntax.

To workaround such problems, the pdf package provides extended syntax of standard L^AT_EX sectioning commands:

`\sectioningcommand` $(\langle outline text \rangle)[\langle TOC text \rangle]\{\langle text \rangle\}$

As usual in L^AT_EX, optional $\langle TOC text \rangle$ is passed to the table of contents, $\langle text \rangle$ is the name of the section and the $\langle outline text \rangle$ is the respective bookmark text.

In the example above, `\section(2+2=4?){$2+2=4$?}` provides the desirable result.

3 Implementation

3.1 Initialization

```
1 \*package
2 \RequirePackage{keyval}[1997/11/10]
3 \RequirePackage{color}
4 \*debug
5 \newbox\MMM
6 \sbox\MMM{\textcolor{red}{$\m@th*$}}%
7 \wd\MMM\z@\ht\MMM\z@\dp\MMM\z@
8 \</debug>
```

Default text colors for links, external links, and launch actions.

```

9 \def\vtexpdf@linktextcolor{green}
10 \def\vtexpdf@filetextcolor{blue}
11 \def\vtexpdf@launchtextcolor{cyan}

```

Default border colors for links, external links, and launch actions.

```

12 \let\vtexpdf@noborder\@empty
13 \def\vtexpdf@linkcolor@dflt{.9 0 0}
14 \def\vtexpdf@filecolor@dflt{0 .9 0}
15 \def\vtexpdf@launchcolor@dflt{0 .7 .7}

```

Default border style (no corners, solid line 1 pt wide).

```

16 \def\vtexpdf@borderstyle@dflt{0 0 1}

```

Working and dummy definitions for \vtexpdf@colorlink:

```

17 \long\def\vtexpdf@colorlink@wrk#1#2%
18 {%
19   \textcolor{#1}{#2}%
20 }%
21 \long\def\vtexpdf@colorlink@dummy#1#2%
22 {%
23   {#2}%
24 }%
25 %
26 \def\vtexpdf@setcolorlinks
27 {%
28   \if\vtexpdf@colorlinks
29     \let\vtexpdf@colorlink\vtexpdf@colorlink@wrk
30     \let\vtexpdf@linkcolor\vtexpdf@noborder
31     \let\vtexpdf@filecolor\vtexpdf@noborder
32     \let\vtexpdf@launchcolor\vtexpdf@noborder
33   \else
34     \let\vtexpdf@colorlink\vtexpdf@colorlink@dummy
35     \let\vtexpdf@linkcolor\vtexpdf@linkcolor@dflt
36     \let\vtexpdf@filecolor\vtexpdf@filecolor@dflt
37     \let\vtexpdf@launchcolor\vtexpdf@launchcolor@dflt
38   \fi
39 }%

```

We have to convert RGB colors given in internal V_TE_X presentation into R G B. Color models other than RGB are not supported.

```

40 \def\vtexpdf@RGBtoPDF#1%
41 {%
42   \@ifundefined{\string\color @#1}%
43   {\c@lor@error{‘#1’}}%
44   {%
45     \def\vtexpdf@color@name{#1}%

```

```

46 \expandafter\let\expandafter\vtexpdf@current@color
47 \csname\string\color @#1\endcsname
48 \expandafter\@vtexpdf@merge@color\vtexpdf@current@color\@
49 }%
50 }%

```

Some packages make " active.

```

51 \edef\vtexpdf@rgb@attr{\expandafter\@gobble\string"}%
52 \let\vtexpdf@dblquote\vtexpdf@rgb@attr
53 %
54 \def\@vtexpdf@merge@color c#1%
55 {%
56 \edef\vtexpdf@attr{#1}%
57 \ifx\vtexpdf@attr\vtexpdf@rgb@attr
58 \let\n@xt\vtexpdf@merge@rgb@color
59 \else
60 \PackageWarningNoLine{pdf}%
61 {%
62 Can't use the '\vtexpdf@color@name' %
63 color for a link border:\MessageBreak
64 only RGB color model supported for PDF links%
65 }%
66 \let\vtexpdf@color\vtexpdf@noborder
67 \let\n@xt\vtexpdf@gobble@color
68 \fi
69 \n@xt
70 }%
71 %
72 \def\vtexpdf@to@unit#1#2#3%
73 {%
74 \expandafter\count@\vtexpdf@dblquote#1#2\relax
75 \dimen@ \count@\p@
76 \divide\dimen@ \@cc1v
77 \edef#3{\strip@pt\dimen@}%
78 }%
79 %
80 \def\vtexpdf@gobble@color#1\@{%
81 \def\vtexpdf@merge@rgb@color#1#2#3#4#5#6\@
82 {%
83 \vtexpdf@to@unit{#1}{#2}\color@component
84 \edef\vtexpdf@color{\color@component\space}%
85 \vtexpdf@to@unit{#3}{#4}\color@component
86 \edef\vtexpdf@color{\vtexpdf@color\color@component\space}%
87 \vtexpdf@to@unit{#5}{#6}\color@component
88 \edef\vtexpdf@color{\vtexpdf@color\color@component}%

```

```

89 }%
90 %
91 \def\vtexpdf@boolkey#1#2%
92 {%
93   \csname @vtexpdf@#1\ifx\\#2\\ true\else#2\fi\endcsname
94 }%
95 %
96 \newif\if@vtexpdf@outline
97 \newif\if@vtexpdf@crossrefs
98 \newif\if@vtexpdf@nowarnings
99 \newif\if@vtexpdf@colorlinks
100 \newif\if@vtexpdf@star

```

By default both `\if@vtexpdf@outline` and `\if@vtexpdf@crossrefs` are false, so the package does nothing unless either `outline` or `crossrefs` option is specified.

```

101 \define@key{vtexpdf}{outline}[true]%
102 {%
103   \vtexpdf@boolkey{outline}{#1}%
104 }%
105 \define@key{vtexpdf}{crossrefs}[true]%
106 {%
107   \vtexpdf@boolkey{crossrefs}{#1}%
108 }%
109 \define@key{vtexpdf}{nowarnings}[true]%
110 {%
111   \vtexpdf@boolkey{nowarnings}{#1}%
112 }%
113 \define@key{vtexpdf}{colorlinks}[true]%
114 {%
115   \vtexpdf@boolkey{colorlinks}{#1}%
116   \vtexpdf@setcolorlinks
117 }%
118 \define@key{vtexpdf}{linktextcolor}%
119 {%
120   \def\vtexpdf@linktextcolor{#1}%
121 }%
122 \define@key{vtexpdf}{launchtextcolor}%
123 {%
124   \def\vtexpdf@launchtextcolor{#1}%
125 }%
126 \define@key{vtexpdf}{filetextcolor}%
127 {%
128   \def\vtexpdf@filetextcolor{#1}%
129 }%

```



```

130 \define@key{vtxpdf}{filebordercolor}%
131 {%
132   \vtxpdf@RGBtoPDF{#1}%
133   \let\vtxpdf@filecolor\vtxpdf@color
134 }%
135 \define@key{vtxpdf}{launchbordercolor}%
136 {%
137   \vtxpdf@RGBtoPDF{#1}%
138   \let\vtxpdf@launchcolor\vtxpdf@color
139 }%
140 \define@key{vtxpdf}{linkbordercolor}%
141 {%
142   \vtxpdf@RGBtoPDF{#1}%
143   \let\vtxpdf@linkcolor\vtxpdf@color
144 }%
145 \define@key{vtxpdf}{borderstyle}%
146 {%
147   \def\vtxpdf@borderstyle{#1}%
148 }%

    Set defaults.
149 \vtxpdf@setcolorlinks
150 \let\vtxpdf@borderstyle\vtxpdf@borderstyle@dflt

    Process package options.
151 \edef\@curroptions{\@optionlist{\@currname.\@currentt}}%
152 \edef\vtxpdf@tempa
153 {%
154   \noexpand\setkeys{vtxpdf}{\@curroptions}%
155 }%
156 \vtxpdf@tempa
157 \let\vtxpdf@tempa\@empty
158 \let\CurrentOption\@empty
159 \AtEndOfPackage{\let\@unprocessedoptions\relax}%
160 %
161 \ifx\OpMode\@undefined % compatibility
162   \csname newcount\endcsname\OpMode
163   \OpMode=0 %
164 \fi
165 %
166 % Define dummies
167 %
168 \def\markhy#1%
169 {%
170   \leavevmode
171   \hbox{#1}%

```

```

172 }%
173 \def\nomarkhy#1{%
174 \def\extusehy#1#2#3%
175 {%
176   \leavevmode
177   \hbox{#3}%
178 }%
179 %
180 \def\launch#1%
181 {%
182   \@ifnextchar[%
183   {\vtxpdf@launch{#1}}{\vtxpdf@launch{#1}[]}%
184 }%
185 \def\vtxpdf@launch#1[#2]#3%
186 {%
187   \leavevmode
188   {#3}%
189 }%
190 %
191 \def\usehy
192 {%
193   \@ifnextchar[%
194   {\vtxpdf@usehy@@}{\vtxpdf@usehy@}%
195 }%
196 \def\vtxpdf@usehy@#1{\vtxpdf@usehy@@{#1}{#1}}
197 \def\vtxpdf@usehy@@[#1]#2{\vtxpdf@usehy@@{#1}{#2}}
198 \def\vtxpdf@usehy@@#1#2%
199 {%
200   \leavevmode
201   {#2}%
202 }%
203 %
204 \let\vtxpdf@what@to@do\relax
205 \ifnum\OpMode=1 % PDF backend
206 \else
207   \ifnum\OpMode=2 % PS backend
208   \else
209     \PackageWarningNoLine{pdf}{%
210       Not in PDF- or PS-generating mode.\MessageBreak
211       Skipping rest of the package}%
212     \let\vtxpdf@what@to@do\endinput
213   \fi
214 \fi
215 \vtxpdf@what@to@do
216 %

```

```

217 \newcount\vtexpdf@c@outline@open@depth
218 \vtexpdf@c@outline@open@depth=1 %
219 %
220 \def\setoutlineopendepth#1%
221 {%
222   \vtexpdf@c@outline@open@depth=#1\relax
223 }%
224 \let\vtexpdf@markpage\relax
225 %
226 \let\vtexpdf@do@smth\relax
227 \def\vtexpdf@aname@check#1%
228 {%
229   \vtexpdf@is@name{#1}\exist@in\vtexpdf@aname@list
230   \if@vtexpdf@aname@exists
231     \typeout{^^JPackage pdf Warning: %
232       Multiply defined anchor ‘#1’ ignored.^^J}%
233   \else
234     \vtexpdf@append@to@aname@list\vtexpdf@aname@list{#1}%
235     \vtexpdf@do@aname{#1}%
236   \fi
237 }%
238 \def\vtexpdf@do@aname#1{\special{!aname #1}}%
239 \if@vtexpdf@nowarnings
240   \let\vtexpdf@aname\vtexpdf@do@aname
241 \else
242   \let\vtexpdf@aname\vtexpdf@aname@check
243 \fi
244 %
245 \newtoks\vtexpdf@tok@c
246 \def\vtexpdf@append@to@aname@list#1%
247 {%
248   \vtexpdf@tok@c={#1}%
249   \ifx#1\@undefined
250     \vtexpdf@tok@b={} %
251   \else
252     \vtexpdf@tok@b=\expandafter{#1}%
253   \fi
254   \afterassignment\vtexpdf@append@@to@aname@list\vtexpdf@tok@a=%
255 }
256 %
257 \def\vtexpdf@append@@to@aname@list
258 {%
259   \vtexpdf@tok@a=\expandafter{\expandafter
260     \vtexpdf@do@smth\expandafter{\the\vtexpdf@tok@a}}%
261   \expandafter\xdef\the\vtexpdf@tok@c

```

```

262     {\the\vtexpdf@tok@b\the\vtexpdf@tok@a}%
263 }
264 %
265 \newtoks\vtexpdf@tok@a
266 \newtoks\vtexpdf@tok@b
267 %%
268 %\def\vtexpdf@append@to@aname@list#1#2%
269 %{%
270 %   \ifx#1\@undefined
271 %     \vtexpdf@tok@b={}%
272 %   \else
273 %     \vtexpdf@tok@b=\expandafter{#1}%
274 %   \fi
275 %   \edef\vtexpdf@tempa{#2}%
276 %   \vtexpdf@tok@a=\expandafter{\expandafter
277 %     \vtexpdf@do@smth\expandafter{\vtexpdf@tempa}}%
278 %   \xdef#1{\the\vtexpdf@tok@a\the\vtexpdf@tok@b}%
279 }}%
280 %
281 \newif\if@vtexpdf@aname@exists
282 \def\vtexpdf@is@name#1\exist@in#2%
283 {%
284   \@vtexpdf@aname@existsfalse
285   \ifx#2\@undefined
286   \else
287     \edef\vtexpdf@given{#1}%
288     \def\vtexpdf@do@smth##1%
289     {%
290       \def\vtexpdf@next{##1}%
291       \ifx\vtexpdf@next\vtexpdf@given
292         \@vtexpdf@aname@existstrue
293       \fi
294     }%
295     #2%
296   \fi
297 }}%
298 %
299 \let\vtexpdf@exception@list\@empty
300 \def\AddPDFException#1%
301 {%
302   \vtexpdf@append@to@aname@list\vtexpdf@exception@list{#1}%
303 }%

```

3.2 Building Outlines

We build outlines only when the `outline` package option is given.

```
304 \if@vtexpdf@outline

    Here we make the actual job of building outlines.

305 \newcount\vtexpdf@c@partparent
306 \vtexpdf@c@partparent\z@
307 \newcount\vtexpdf@c@chapterparent
308 \vtexpdf@c@chapterparent\z@
309 \newcount\vtexpdf@c@sectionparent
310 \vtexpdf@c@sectionparent\z@
311 \newcount\vtexpdf@c@subsectionparent
312 \vtexpdf@c@subsectionparent\z@
313 \newcount\vtexpdf@c@subsubsectionparent
314 \vtexpdf@c@subsubsectionparent\z@
315 \newcount\vtexpdf@c@paragraphparent
316 \vtexpdf@c@paragraphparent\z@
317 \newcount\vtexpdf@c@subparagraphparent
318 \vtexpdf@c@subparagraphparent\z@
319 %
320 \newcount\vtexpdf@c@outline
321 \vtexpdf@c@outline=1 %
322 %
323 \def\vtexpdf@sanitize
324 {%
325   \def\bf{}%
326   \set@display@protect
327   \def\TeX{\TeX}%
328   \def\GeX{\GeX}%
329   \def\GeX/{\GeX}%
330   \def\VTex{\VTex}%
331   \def\VTex/{\VTex}%
332   \def\LaTeX{\LaTeX}%
333   \def\ { }%
334   \def\%{\char"25}%
335   \def\vtexpdf@do@smth##1{##1}%
336   \vtexpdf@exception@list
337 }%
338 \def\vtexpdf@outline#1#2#3#4%
339 {%
340   \bgroup
341     \let\@mkboth\@gobbletwo % XXXXXX ugly!
342     \vtexpdf@sanitize
343 \<*debug>
```

```

344     \copy\MMM
345 \</debug>
346     \immediate\special{!outline %
347         #2;p=\the#1,i=\the\vtexpdf@c@outline,%
348         s=#4,t=#2}%
349     \vtexpdf@aname{#2}%
350     \global\advance\vtexpdf@c@outline 1 %
351     %
352     \vtexpdf@markpage
353 \egroup
354 }%
355 %
356 \def\vtexpdf@setpartchild
357 {%
358     \global\vtexpdf@c@chapterparent=\the\vtexpdf@c@outline
359     \global\vtexpdf@c@sectionparent=\the\vtexpdf@c@outline
360     \global\vtexpdf@c@subsectionparent=\the\vtexpdf@c@outline
361     \global\vtexpdf@c@subsubsectionparent=\the\vtexpdf@c@outline
362     \global\vtexpdf@c@paragraphparent=\the\vtexpdf@c@outline
363     \global\vtexpdf@c@subparagraphparent=\the\vtexpdf@c@outline
364 }%
365 \def\vtexpdf@setchapterchild
366 {%
367     \global\vtexpdf@c@sectionparent=\the\vtexpdf@c@outline
368     \global\vtexpdf@c@subsectionparent=\the\vtexpdf@c@outline
369     \global\vtexpdf@c@subsubsectionparent=\the\vtexpdf@c@outline
370     \global\vtexpdf@c@paragraphparent=\the\vtexpdf@c@outline
371     \global\vtexpdf@c@subparagraphparent=\the\vtexpdf@c@outline
372 }%
373 \def\vtexpdf@setsectionchild
374 {%
375     \global\vtexpdf@c@subsectionparent=\the\vtexpdf@c@outline
376     \global\vtexpdf@c@subsubsectionparent=\the\vtexpdf@c@outline
377     \global\vtexpdf@c@paragraphparent=\the\vtexpdf@c@outline
378     \global\vtexpdf@c@subparagraphparent=\the\vtexpdf@c@outline
379 }%
380 \def\vtexpdf@setsubsectionchild
381 {%
382     \global\vtexpdf@c@subsubsectionparent=\the\vtexpdf@c@outline
383     \global\vtexpdf@c@paragraphparent=\the\vtexpdf@c@outline
384     \global\vtexpdf@c@subparagraphparent=\the\vtexpdf@c@outline
385 }%
386 \def\vtexpdf@setsubsubsectionchild
387 {%
388     \global\vtexpdf@c@paragraphparent=\the\vtexpdf@c@outline

```

```

389 \global\vtexpdf@c@subparagraphparent=\the\vtexpdf@c@outline
390 }%
391 \def\vtexpdf@setparagraphchild
392 {%
393 \global\vtexpdf@c@subparagraphparent=\the\vtexpdf@c@outline
394 }%
395 \def\vtexpdf@setsubparagraphchild{%
396 %
397 %
398 \def\vtexpdf@state#1#2{c}%
399 %
400 \let\vtexpdf@orig@part=\@part
401 \def\@part[#1]#2%
402 {%
403 \vtexpdf@setpartchild
404 \vtexpdf@get@this@outline{#1}%
405 \edef\vtexpdf@this@sect@bookmark
406 {%
407 \noexpand\vtexpdf@outline{\vtexpdf@c@partparent}%
408 {\vtexpdf@tempa}{\noexpand\thepage}%
409 {\vtexpdf@state{-1}}{\vtexpdf@c@outline@open@depth}}%
410 }%
411 \vtexpdf@orig@part[#1]{\vtexpdf@this@sect@bookmark#2}%
412 }%
413 %
414 \let\vtexpdf@orig@spart=\@spart
415 \def\@spart#1%
416 {%
417 \vtexpdf@setpartchild
418 \vtexpdf@get@this@outline{#1}%
419 \edef\vtexpdf@this@sect@bookmark
420 {%
421 \noexpand\vtexpdf@outline{\vtexpdf@c@partparent}%
422 {\vtexpdf@tempa}{\noexpand\thepage}%
423 {\vtexpdf@state{-1}}{\vtexpdf@c@outline@open@depth}}%
424 }%
425 \vtexpdf@orig@spart{\vtexpdf@this@sect@bookmark#1}%
426 }%
427 %
428 \let\vtexpdf@orig@chapter=\@chapter
429 \def\@chapter[#1]#2%
430 {%
431 \vtexpdf@setchapterchild
432 \vtexpdf@get@this@outline{#1}%
433 \edef\vtexpdf@this@sect@bookmark

```

```

434  {%
435    \noexpand\vtexpdf@outline{\vtexpdf@c@chapterparent}%
436    {\vtexpdf@tempa}{\noexpand\thepage}%
437    {\vtexpdf@state{0}}{\vtexpdf@c@outline@open@depth}}%
438  }%
439  \vtexpdf@orig@chapter[#1]{\vtexpdf@this@sect@bookmark#2}%
440 }%
441 %
442 \let\vtexpdf@orig@schapter=\@schapter
443 \def\@schapter#1%
444 {%
445   \vtexpdf@setchapterchild
446   \vtexpdf@get@this@outline{#1}%
447   \edef\vtexpdf@this@sect@bookmark
448   {%
449     \noexpand\vtexpdf@outline{\vtexpdf@c@chapterparent}%
450     {\vtexpdf@tempa}{\noexpand\thepage}%
451     {\vtexpdf@state{0}}{\vtexpdf@c@outline@open@depth}}%
452   }%
453   \vtexpdf@orig@schapter{\vtexpdf@this@sect@bookmark#1}%
454 }%
455 %
456 \def\vtexpdf@get@bookmark@skip
457 {%
458   \ifx\@svsec\@empty

This is just a rule of thumb.

459   \def\vtexpdf@bookmark@skip{1em}%
460   \else
461     \sbox\z@{\@svsec}%
462     \dimen@=\wd\z@
463     \advance\dimen@ 1em\relax
464     \edef\vtexpdf@bookmark@skip{\the\dimen@}%
465   \fi
466 }%
467 %
468 \def\vtexpdf@put@anchor#1%
469 {%
470   \raise\ht\strutbox
471   \hbox
472   {%
473     \hskip-\vtexpdf@bookmark@skip
474     #1\relax
475     \hskip\vtexpdf@bookmark@skip
476   }%

```



```

477 }%
478 \let\vtexpdf@orig@sect=\@sect
479 \def\vtexpdf@sect@bookmark#1#2#3%
480 {%
481   \vtexpdf@get@bookmark@skip
482   \vtexpdf@put@anchor
483   {%
484     \expandafter\vtexpdf@outline\expandafter
485     {\csname vtexpdf@c@#1parent\endcsname}{#2}{\thepage}%
486     {\vtexpdf@state{#3}{\vtexpdf@c@outline@open@depth}}}%
487   }%
488 }%
489 %
490 \def\vtexpdf@get@this@outline#1%
491 {%
492   \bgroup

```

Here we must disable \@mkboth which can be appended to the section name if the document class with a running head option is used.

```

493   \let\@mkboth\@gobbletwo
494   \vtexpdf@sanitize
495   \ifx\vtexpdf@outline@string\relax
496     \xdef\vtexpdf@tempa{#1}%
497   \else
498     \global\let\vtexpdf@tempa\vtexpdf@outline@string
499     \global\let\vtexpdf@outline@string\relax
500   \fi
501 \egroup
502 }%
503 \def\@sect#1#2#3#4#5#6[#7]#8%
504 {%
505   \csname vtexpdf@set#1child\endcsname
506   \vtexpdf@get@this@outline{#7}%
507   \edef\vtexpdf@this@sect@bookmark
508   {%
509     \noexpand\vtexpdf@sect@bookmark{#1}{\vtexpdf@tempa}{#2}%
510   }%
511   \vtexpdf@orig@sect{#1}{#2}{#3}%
512   {#4}{#5}{#6}[#7]{\vtexpdf@this@sect@bookmark#8}%
513 }%
514 %
515 \let\vtexpdf@orig@startsection=\@startsection
516 \def\@startsection#1#2#3#4#5#6%
517 {%
518   \def\vtexpdf@secttype{#1}%

```

```

519 \def\vtexpdf@secdepth{#2}%
520 \vtexpdf@orig@startsection{#1}{#2}{#3}{#4}{#5}{#6}%
521 }%
522 \def\vtexpdf@sectype{root}%
523 \def\vtexpdf@secdepth{0}%
524 %
525 \def\vtexpdf@ssect@bookmark#1%
526 {%

This is just a rule of thumb.

527 \def\vtexpdf@bookmark@skip{1em}%
528 \vtexpdf@put@anchor
529 {%
530 \expandafter\vtexpdf@outline\expandafter
531 {\csname vtexpdf@c@\vtexpdf@sectype parent\endcsname}%
532 {#1}{\thepage}%
533 {\vtexpdf@state
534 {\vtexpdf@secdepth}{\vtexpdf@c@outline@open@depth}%
535 }%
536 }%
537 }%
538 %
539 \let\vtexpdf@orig@ssect=\@ssect
540 \def\@ssect#1#2#3#4#5%
541 {%
542 \csname vtexpdf@set\vtexpdf@sectype child\endcsname
543 \vtexpdf@get@this@outline{#5}%
544 \edef\vtexpdf@this@ssect@bookmark
545 {%
546 \noexpand\vtexpdf@ssect@bookmark{\vtexpdf@tempa}%
547 }%
548 \vtexpdf@orig@ssect{#1}{#2}{#3}{#4}%
549 {\vtexpdf@this@ssect@bookmark#5}%
550 }%
551 %
552 \def\vtexpdf@do@ssect#1%
553 {%
554 \let\vtexpdf@toc@string\relax
555 \let\vtexpdf@outline@string\relax
556 \let\vtexpdf@seccmd#1%
557 \@ifnextchar*\vtexpdf@get@star
558 \vtexpdf@parse@arg
559 }%
560 \def\vtexpdf@parse@arg
561 {%

```

```

562 \@ifnextchar[\vtxpdf@get@toc
563 {%
564     \@ifnextchar(\vtxpdf@get@outline
565         \vtxpdf@process
566     }%
567 }%
568 \def\vtxpdf@get@star#1%
569 {%
570     \@vtxpdf@startrue
571     \vtxpdf@parse@arg
572 }%
573 \long\def\vtxpdf@get@toc[#1]%
574 {%
575     \ifx\vtxpdf@toc@string\relax
576         \def\vtxpdf@toc@string{#1}%
577     \else
578         \vtxpdf@invalid@arg
579     \fi
580     \vtxpdf@parse@arg
581 }%
582 \def\vtxpdf@get@outline(#1)%
583 {%
584     \ifx\vtxpdf@outline@string\relax
585         \def\vtxpdf@outline@string{#1}%
586     \else
587         \vtxpdf@invalid@arg
588     \fi
589     \vtxpdf@parse@arg
590 }
591 \def\vtxpdf@invalid@arg
592 {%
593     \PackageWarning{pdf}{%
594         Invalid combination of optional arguments\MessageBreak
595         in sectioning command}%
596 }%
597 \def\vtxpdf@extraneous@arg
598 {%
599     \PackageWarning{pdf}{%
600         Extraneous table of contents entry ignored\MessageBreak}%
601 }%
602 \long\def\vtxpdf@process
603 {%
604     \ifx\vtxpdf@toc@string\relax
605         \ifvtxpdf@star
606             \def\@next{\vtxpdf@seccmd*}%

```

```

607     \@vtxpdf@starfalse
608     \else
609         \let\@next\vtxpdf@seccmd
610     \fi
611 \else
612     \if@vtxpdf@star

```

Combination like `\section*[<...>]{<...>}` is parsed by pdf's redefined sectioning macros. However, it doesn't make sense because the `[<...>]` argument is just extraneous. So we give a respective warning.

```

613     \vtxpdf@extraneous@arg
614     \def\@next{\vtxpdf@seccmd*}%
615     \@vtxpdf@starfalse
616     \else
617         \def\@next{\vtxpdf@seccmd[\vtxpdf@toc@string]}%
618     \fi
619 \fi
620 \@next
621 }%
622 \def\vtxpdf@redefine@seccmd#1%
623 {%
624     \expandafter\ifx\csname #1\endcsname\relax
625     \else
626         \expandafter\let\expandafter\vtxpdf@temp\csname #1\endcsname
627         \expandafter\let\csname vtexpdf@#1\endcsname \vtxpdf@temp
628         \expandafter\renewcommand\csname #1\endcsname
629             {\expandafter\vtxpdf@do@sect\csname vtexpdf@#1\endcsname}%
630     \fi
631 }%
632 \AtBeginDocument
633 {%
634     \vtxpdf@redefine@seccmd{part}%
635     \vtxpdf@redefine@seccmd{chapter}%
636     \vtxpdf@redefine@seccmd{section}%
637     \vtxpdf@redefine@seccmd{subsection}%
638     \vtxpdf@redefine@seccmd{subsubsection}%
639     \vtxpdf@redefine@seccmd{paragraph}%
640     \vtxpdf@redefine@seccmd{subparagraph}%
641 }%
642 %
643 \fi

```

End of `\if@vtxpdf@outline`.

3.3 Cross-references

We enable cross-references only when the `crossrefs` package option is given.

```
644 \if@vtexpdf@crossrefs
645 %
646 \def\vtexpdf@setborder#1%
647 {%
648   \ifx#1\vtexpdf@noborder
649     /Border [0 0 0] %
650   \else
651     /C [#1] %
652     /Border [\vtexpdf@borderstyle] %
653   \fi
654 }%
655 %
656 \def\vtexpdf@arefbegin#1%
657 {%
658   \special{!aref #1;%
659     a=<\vtexpdf@setborder\vtexpdf@linkcolor>%
660   }%
661 }%
662 \def\vtexpdf@arefend{\special{!endaref}}%
663 %
664 \let\vtexpdf@orig@ref=\ref
665 \let\vtexpdf@orig@pageref=\pageref
666 \let\vtexpdf@orig@label=\label
667 \def\ref#1%
668 {%
669   \leavevmode
670   \vtexpdf@arefbegin{label:#1}%
671     \vtexpdf@colorlink\vtexpdf@linktextcolor
672     {\vtexpdf@orig@ref{#1}}%
673   \vtexpdf@arefend
674 }%
675 \def\pageref#1%
676 {%
677   \leavevmode
678   \vtexpdf@arefbegin{label:#1}%
679     \vtexpdf@orig@pageref{#1}%
680   \vtexpdf@arefend
681 }%
682 \def\label#1%
683 {%
684   \leavevmode
```

```

685 \hbox{\vtxpdf@aname{label:#1}%
686 \vtxpdf@orig@label{#1}}%
687 }%
688 %
689 \def\markhy#1%
690 {%
691 \leavevmode
692 \hbox{\vtxpdf@aname{#1}#1}%
693 }%
694 \def\nomarkhy#1{\vtxpdf@aname{#1}}%
695 \let\anchor\nomarkhy
696 %
697 \def\vtxpdf@launch#1[#2]#3%
698 {%
699 \leavevmode
700 \special{!aref %
701 <u=%
702 /Type /Action %
703 /S /Launch %
704 /F (#1) %
705 \ifx\#2\\\else /Win << /F (#1) /P (#2) >> \fi
706 >;%
707 a=<\vtxpdf@setborder\vtxpdf@launchcolor>%
708 }%
709 \vtxpdf@colorlink\vtxpdf@launchtextcolor{#3}%
710 \vtxpdf@arefend
711 }%
712 %
713 \def\vtxpdf@usehy@@@#1#2%
714 {%
715 \bgroup
716 \vtxpdf@sanitize
717 \xdef\vtxpdf@reservedctrl{#1}%
718 \egroup
719 \leavevmode
720 \special{!aref \vtxpdf@reservedctrl;%
721 a=<\vtxpdf@setborder\vtxpdf@linkcolor>%
722 }%
723 \vtxpdf@colorlink\vtxpdf@linktextcolor{#2}%
724 \vtxpdf@arefend
725 }%
726 %
727 \def\extusehy#1#2#3%
728 {%
729 \bgroup

```

```

730     \vtxpdf@sanitize
731     \xdef\vtxpdf@reservedctrl{#2}%
732 \egroup
733 \leavevmode
734 \special{!aref <f=#1>\vtxpdf@reservedctrl;%
735     a=<\vtxpdf@setborder\vtxpdf@filecolor>%
736 }%
737 \vtxpdf@colorlink\vtxpdf@filetextcolor{#3}%
738 \vtxpdf@arefend
739 }
740 %
741 \let\vtxpdf@orig@contentsline\contentsline
742 \def\contentsline#1#2#3%
743 {%
744     \vtxpdf@orig@contentsline{#1}{#2}{%
745         \hbox{\vtxpdf@linktopage{#3}}}%
746 }%
747 }%
748 \def\vtxpdf@linktopage#1%
749 {%
750     \leavevmode
751     \vtxpdf@arefbegin{pageno:#1}%
752         \vtxpdf@colorlink\vtxpdf@linktextcolor{#1}%
753     \vtxpdf@arefend
754 }%
755 \def\vtxpdf@markpage
756 {%
757     \vtxpdf@is@name{pageno:\thepage}\exist@in\vtxpdf@aname@list
758     \if\vtxpdf@aname@exists
759     \else
760         \vtxpdf@append@to@aname@list\vtxpdf@aname@list
761         {pageno:\thepage}%
762         \vtxpdf@do@aname{pageno:\thepage}%
763     \fi
764 }%
765 %
766 \fi % \if\vtxpdf@crossrefs
767 </package>
768 \endinput

```