The hypdestopt package

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Abstract

Package hypdestopt supports hyperref's pdftex driver. It removes unnecessary destinations and shortens the destination names or uses numbered destinations to get smaller PDF files.

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^{*}Please report any issues at https://github.com/ho-tex/oberdiek/issues

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1 User interface

1.1 Introduction

Before PDF-1.5 annotations and destinations cannot be compressed. If the destination names are not needed for external use, the file size can be decreased by the following means:

- Unused destinations are removed.
- The destination names are shortened (option name).
- Using numbered destinations (option num).

1.2 Requirements

- Package hyperref 2006/06/01 v6.75a or newer ([2]).
- Package alphalph 2006/05/30 v1.4 or newer ([1]), if option name is used.
- Package iftex.
- pdfT_EX 1.30.0 or newer.
- pdfT_EX in PDF mode.
- ε -T_FX extensions enabled.
- Probably an additional compile run of pdfIATEX is necessary.

In the first compile runs you can get warnings such as:

```
! pdfTeX warning (dest): name{...} has been referenced ...
```

These warnings should vanish in later compile runs. However these warnings also can occur without this package. The package does not cure them, thus these warnings will remain, but the destination name can be different. In such cases test without package, too.

1.3 Use

If the requirements are met, load the package:

\usepackage{hypdestopt}

The following options are supported:

verbose: Verbose debug output is enabled and written in the protocol file.

num: Numbered destinations are used. The file size is smaller, because names are no longer used. This is the default.

name: Destinations are identified by names.

1.4 Limitations

- Forget this package, if you need preserved destination names.
- Destination name strings use all bytes (0..255) except the carriage return (13), left parenthesis (40), right parenthesis (41), and backslash (92), because they must be quoted in general and therefore occupy two bytes instead of one.

Further the zero byte (0) is avoided for programs that implement strings using zero terminated C strings. And 255 (0xFF) is avoided to get rid of a possible unicode marker at the begin.

So far I have not seen problems with:

- AcrobatReader 5.08/Linux
- AcrobatReader 7.0/Linux
- xpdf 3.00
- Ghostscript 8.50
- gv 3.5.8
- GSview 4.6

But I have not tested all and all possible PDF viewers.

- Use of named destinations (\pdfdest, \pdfoutline, \pdfstartlink, ...) that are not supported by this package.
- Currently only hyperref with pdfTFX in PDF mode is supported.

1.5 Future

A more general approach is a PDF postprocessor that takes a PDF file, performs some transformations and writes the result in a more optimized PDF file. Then it does not depend, how the original PDF file was generated and further improvements are easier to apply. For example, the destination names could be sorted: often used destination names would then be shorter than seldom used ones.

Implementation

2.1 Identification

```
1 (*package)
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{hypdestopt}%
   [2019/12/29 v2.6 Hyperref destination optimizer (HO)]%
```

2.2Options

2.2.1 Option verbose

```
5 \newif\ifHypDest@Verbose
6 \DeclareOption{verbose}{\HypDest@Verbosetrue}
```

\HypDest@VerboseInfo Wrapper for verbose messages.

```
7 \def\HypDest@VerboseInfo#1{%
    \ifHypDest@Verbose
       \verb|\PackageInfo{hypdestopt}{#1}||
9
10
    \fi
11 }
```

2.2.2Options num and name

The options num or name specify the method, how destinations are referenced (by name or number). Default is option num.

```
12 \newif\ifHypDest@name
13 \DeclareOption{num}{\HypDest@namefalse}
14 \DeclareOption{name}{\HypDest@nametrue}
15 \ProcessOptions*\relax
```

2.3 Check requirements

First pdfTFX must running in PDF mode.

```
16 \RequirePackage{iftex}[2019/11/07]
17 \RequirePackage{pdftexcmds} [2007/11/11]
18 \ifpdf
19 \else
    \PackageError{hypdestopt}{%
21
      This package requires pdfTeX in PDF mode%
22
    \expandafter\endinput
23
24 \fi
```

The version of pdfTFX must not be too old, because \pdfescapehex and \pdfunescapehex are used.

```
25 \begingroup\expandafter\expandafter\expandafter\endgroup
26 \expandafter\ifx\csname pdf@escapehex\endcsname\relax
    \PackageError{hypdestopt}{%
      This pdfTeX is too old, at least 1.30.0 is required%
28
29
   \ \ \@ehc
30
    \expandafter\endinput
31 \fi
```

Features of ε -T_EX are used, e.g. \numexpr.

```
32 \begingroup\expandafter\expandafter\expandafter\endgroup
```

- 33 \expandafter\ifx\csname numexpr\endcsname\relax
- \PackageError{hypdestopt}{%

```
35 e-TeX features are missing%
36 }\@ehc
37 \expandafter\endinput
38 \fi

Package alphalph provides \newalphalph since version 2006/05/30 v1.4.
39 \ifHypDest@name
40 \RequirePackage{alphalph}[2006/05/30]%
41 \fi

42 \RequirePackage{auxhook}[2009/12/14]
43 \RequirePackage{pdfescape}[2007/04/21]
```

2.4 Preamble for auxiliary file

Provide dummy definitions for the macros that are used in the auxiliary files. If the package is used no longer, then these commands will not generate errors.

\HypDest@PrependDocument

We add our stuff in front of the \AtBeginDocument hook to ensure that we are before hyperref's stuff.

```
44 \long\def\HypDest@PrependDocument#1{%
45 \begingroup
46 \toks\z@{#1}%
47 \toks\tw@\expandafter{\@begindocumenthook}%
48 \xdef\@begindocumenthook{\the\toks\z@\the\toks\tw@}%
49 \endgroup
50 }
51 \AddLineBeginAux{%
52 \string\providecommand{\string\HypDest@Use}[1]{}%
53 }
```

2.5 Generation of destination names

Counter HypDest is used for identifying destinations.

```
54 \newcounter{HypDest}
55 \ifHypDest@name
```

\HypDest@HexChar

Destination names are generated by automatically numbering with the help of package alphalph. \HypDest@HexChar converts a number of the range 1 until 252 into the hexadecimal representation of the string character.

```
56 \def\HypDest@HexChar#1{%
57 \ifcase#1\or
```

Avoid zero byte because of C strings in PDF viewer applications.

```
58 01\or 02\or 03\or 04\or 05\or 06\or 07\or
```

Omit carriage return $(13/^{\circ}0d)$. It needs quoting, otherwise it would be converted to line feed $(10/^{\circ}0a)$.

Omit left and right parentheses $(40/^228, 41/^39)$, they need quoting in general.

```
67
                             48\or 49\or 4A\or 4B\or 4C\or 4D\or 4E\or 4F\or
                             50\or 51\or 52\or 53\or 54\or 55\or 56\or 57\or
                    68
                    Omit backslash (92/^^5C), it needs quoting.
                             58\or 59\or 5A\or 5B\or 5D\or 5E\or 5F\or
                    69
                             60\or 61\or 62\or 63\or 64\or 65\or 66\or 67\or
                    70
                             68\or 69\or 6A\or 6B\or 6C\or 6D\or 6E\or 6F\or
                    71
                             70\or 71\or 72\or 73\or 74\or 75\or 76\or 77\or
                    72
                             78\or 79\or 7A\or 7B\or 7C\or 7D\or 7E\or 7F\or
                    73
                             80\or 81\or 82\or 83\or 84\or 85\or 86\or 87\or
                    74
                             88\or 89\or 8A\or 8B\or 8C\or 8D\or 8E\or 8F\or
                    75
                             90\or 91\or 92\or 93\or 94\or 95\or 96\or 97\or
                    76
                             98\or 99\or 9A\or 9B\or 9C\or 9D\or 9E\or 9F\or
                    77
                    78
                             AO\or A1\or A2\or A3\or A4\or A5\or A6\or A7\or
                    79
                             A8\or A9\or AA\or AB\or AC\or AD\or AE\or AF\or
                    80
                             BO\or B1\or B2\or B3\or B4\or B5\or B6\or B7\or
                             B8\or B9\or BA\or BB\or BC\or BD\or BE\or BF\or
                    81
                             CO\or C1\or C2\or C3\or C4\or C5\or C6\or C7\or
                    82
                             C8\or C9\or CA\or CB\or CC\or CD\or CE\or CF\or
                    83
                             DO\or D1\or D2\or D3\or D4\or D5\or D6\or D7\or
                    84
                             D8\or D9\or DA\or DB\or DC\or DD\or DE\or DF\or
                    85
                             E0\or E1\or E2\or E3\or E4\or E5\or E6\or E7\or
                    86
                             E8\or E9\or EA\or EB\or EC\or ED\or EE\or EF\or
                    87
                             F0\or F1\or F2\or F3\or F4\or F5\or F6\or F7\or
                    88
                    Avoid 255 (0xFF) to get rid of a possible unicode marker at the begin of the string.
                             F8\or F9\or FA\or FB\or FC\or FD\or FE%
                    89
                    90
                           \fi
                         }%
                    91
HypDest@HexString
                   Now package alphalph comes into play. \HypDest@HexString is defined and con-
                   verts a positive number into a string, given in hexadecimal representation.
                         \newalphalph\HypDest@HexString\HypDest@HexChar{250}%
                   For use, the hexadecimal string is converted back.
      \theHypDest
                         \renewcommand*{\theHypDest}{%
                           \pdf@unescapehex{\HypDest@HexString{\value{HypDest}}}}%
                    94
                    95
                        }%
                       With option num we use the number directly.
                    96 \else
                         \renewcommand*{\theHypDest}{%
                    97
                           \number\value{HypDest}%
                    98
                    99
                        }%
                    100 \fi
                          Assign destination names
                   The new destination names are remembered in macros whose names start with
                   prefix \HypDest@Prefix.
```

\HypDest@Prefix

101 \edef\HypDest@Prefix{HypDest\string:}

\HypDest@Use

During the first read of the auxiliary files, the used destinations get fresh generated short destination names. Also for the old destination names we use the hexadecimal representation. That avoid problems with arbitrary names.

```
102 \def\HypDest@Use#1{%
103
      \begingroup
104
         \left( x_{x}\right)
```

```
105
         \expandafter\noexpand
         \csname\HypDest@Prefix\pdf@unescapehex{#1}\endcsname
106
107
108
       \expandafter\ifx\x\relax
         \stepcounter{HypDest}%
109
         \expandafter\xdef\x{\theHypDest}%
110
         \let\on@line\@empty
111
         \ifHypDest@name
112
           \HypDest@VerboseInfo{%
113
             Use: (\pdf@unescapehex{#1}) -\string> %
114
             0x\pdf@escapehex{\x} (\number\value{HypDest})%
115
           }%
116
117
         \else
            \HypDest@VerboseInfo{%
118
             Use: (\pdf@unescapehex{#1}) -\string> num \x
119
120
           }%
         \fi
121
       \fi
122
     \endgroup
123
124 }
```

After the first .aux file processing the destination names are assigned and we can disable \HypDest@Use.

```
125 \AtBeginDocument{%
126 \let\HypDest@Use\@gobble
127 }
```

\HypDest@MarkUsed

Destinations that are actually used are marked by \HypDest@MarkUsed. \nofiles is respected.

```
128 \def\HypDest@MarkUsed#1{%
     \HypDest@VerboseInfo{%
129
       MarkUsed: (#1)%
130
    }%
131
     \if@filesw
132
133
       \immediate\write\@auxout{%
134
         \string\HypDest@Use{\pdf@escapehex{#1}}%
       }%
135
    \fi
136
137 }%
```

2.7 Redefinition of hyperref's hooks

Package hyperref can be loaded later, therefore we redefine hyperref's macros at \begin{document}.

```
138 \HypDest@PrependDocument{\%}
```

Check hyperref version.

```
139  \@ifpackagelater{hyperref}{2006/06/01}{}{%
140     \PackageError{hypdestopt}{%
141         hyperref 2006/06/01 v6.75a or later is required%
142     }\@ehc
143  }%
```

2.7.1 Destination setting

luatex compatibility

 $144 \ifx\pdfextension\Qundefined\else$

```
\protected\def\pdfdest{\pdfextension dest }
146 \fi
     \ifHypDest@name
147
       \let\HypDest@Org@DestName\Hy@DestName
148
       \renewcommand*{\Hy@DestName}[2]{%
149
150
         \EdefUnescapeString\HypDest@temp{#1}%
         \@ifundefined{\HypDest@Prefix\HypDest@temp}{%
151
           \HypDest@VerboseInfo{%
152
             DestName: (\HypDest@temp) unused%
153
           }%
154
         }{%
155
           \HypDest@Org@DestName{%
156
              \csname\HypDest@Prefix\HypDest@temp\endcsname
157
           }{#2}%
158
           \HypDest@VerboseInfo{%
159
             DestName: (\HypDest@temp) %
160
             0x\pdf@escapehex{%
161
                \csname\HypDest@Prefix\HypDest@temp\endcsname
162
163
             }%
           }%
164
         }%
165
       }%
166
167
     \else
       \renewcommand*{\Hy@DestName}[2]{%
168
         \EdefUnescapeString\HypDest@temp{#1}%
169
         \@ifundefined{\HypDest@Prefix\HypDest@temp}{%
170
           \HypDest@VerboseInfo{%
171
             DestName: (\HypDest@temp) unused%
172
           }%
173
         }{%
174
175
           \pdfdest num%
176
           \csname\HypDest@Prefix\HypDest@temp\endcsname#2\relax
177
           \HypDest@VerboseInfo{%
             DestName: (\HypDest@temp) %
178
             num \csname\HypDest@Prefix\HypDest@temp\endcsname
179
           }%
180
181
         }%
182
       }%
     \fi
183
2.7.2 Links
     \let\HypDest@Org@StartlinkName\Hy@StartlinkName
184
185
     \ifHypDest@name
186
       \renewcommand*{\Hy@StartlinkName}[2]{%
187
         \<text>
         \HypDest@Org@StartlinkName{#1}{%
188
           \@ifundefined{\HypDest@Prefix#2}{%
189
             #2%
190
           }{%
191
192
              \csname\HypDest@Prefix#2\endcsname
           }%
193
194
         }%
       }%
195
     \else
196
       \renewcommand*{\Hy@StartlinkName}[2]{%
197
198
         \HypDest@MarkUsed{#2}%
```

\@ifundefined{\HypDest@Prefix#2}{%

199

```
200
            \HypDest@Org@StartlinkName{#1}{#2}%
         }{%
201
202
            \pdfstartlink attr{#1}%
203
                          goto num\csname\HypDest@Prefix#2\endcsname
            \relax
204
205
         }%
       }%
206
     \fi
207
2.7.3
       Outlines of package hyperref
     \let\HypDest@Org@OutlineName\Hy@OutlineName
208
     \ifHypDest@name
209
       \renewcommand*{\Hy@OutlineName}[4]{%
210
         \HypDest@Org@OutlineName{#1}{%
211
212
            \@ifundefined{\HypDest@Prefix#2}{%
213
             #2%
           }{%
214
              \csname\HypDest@Prefix#2\endcsname
215
           }%
216
217
         }{#3}{#4}%
218
       }%
219
       \renewcommand*{\Hy@OutlineName}[4]{%
220
221
         \@ifundefined{\HypDest@Prefix#2}{%
            \HypDest@Org@OutlineName{#1}{#2}{#3}{#4}%
222
         }{%
223
            \pdfoutline goto num\csname\HypDest@Prefix#2\endcsname
224
225
                        count#3{#4}%
226
         }%
227
       }%
228
     \fi
Because \Hy@OutlineName is called after the .out file is written in the previous
run. Therefore we mark the destination earlier in \@@writetorep.
     \let\HypDest@Org@@writetorep\@@writetorep
229
     \renewcommand*{\@@writetorep}[5]{%
230
231
       \begingroup
232
         \edef\Hy@tempa{#5}%
233
         \ifx\Hy@tempa\Hy@bookmarkstype
            \HypDest@MarkUsed{#3}%
234
         \fi
235
       \endgroup
236
       \HypDest@Org@@writetorep{#1}{#2}{#3}{#4}{#5}%
237
238
     }%
       Outlines of package bookmark
2.7.4
239
     \@ifpackageloaded{bookmark}{%
       \@ifpackagelater{bookmark}{2008/08/08}{%
^{240}
         \renewcommand*{\BKM@DefGotoNameAction}[2]{%
241
            \@ifundefined{\HypDest@Prefix#2}{%
242
              \edef#1{goto name{hypdestopt\string :unknown}}%
243
           }{%
244
245
              \ifHypDest@name
246
                \edef#1{goto name{\csname\HypDest@Prefix#2\endcsname}}%
247
                \edef#1{goto num\csname\HypDest@Prefix#2\endcsname}%
248
              \fi
249
           }%
250
251
         }%
```

```
252
          \def\BKM@HypDestOptHook{%
            \ifx\BKM@dest\@empty
253
254
            \else
255
              \ifx\BKM@gotor\@empty
                \HypDest@MarkUsed\BKM@dest
256
257
            \fi
258
          }%
259
       }{%
260
          \@PackageError{hypdestopt}{%
^{261}
            Package 'bookmark' is too old.\MessageBreak
262
            Version 2008/08/08 or later is needed%
263
264
          }\@ehc
       }%
265
     }{}%
266
267 }
268 (/package)
```

3 Installation

3.1 Download

Package. This package is available on CTAN¹:

CTAN:macros/latex/contrib/oberdiek/hypdestopt.dtx The source file.

CTAN:macros/latex/contrib/oberdiek/hypdestopt.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 TeX Files" (CTAN:pkg/tds). Directories with texmf in their name are usually organized this way.

3.2 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
```

3.3 Package installation

Unpacking. The .dtx file is a self-extracting docstrip archive. The files are extracted by running the .dtx through plain T_FX:

tex hypdestopt.dtx

¹CTAN:pkg/hypdestopt

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

```
\label{eq:hypdestopt.sty}  \begin{picture}(1)0\label{eq:hypdestopt.sty} $$ \hypdestopt.pdf $\to doc/latex/oberdiek/hypdestopt.pdf $$ \hypdestopt.dtx $\to source/latex/oberdiek/hypdestopt.dtx $$ \end{picture} $$
```

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.

3.4 Refresh file name databases

If your TEX distribution (TEX Live, MiKTEX, ...) relies on file name databases, you must refresh these. For example, TEX Live users run texhash or mktexlsr.

3.5 Some details for the interested

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{hypdestopt.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 pdfIATFX:

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

4 References

- [1] Heiko Oberdiek: The alphalph package; 2006/05/30 v1.4; CTAN:pkg/alphalph.
- [2] Sebastian Rahtz, Heiko Oberdiek: *The hyperref package*; 2006/06/01 v6.75a; CTAN:pkg/hyperref.

5 History

[2006/06/01 v1.0]

• First version.

[2006/06/01 v2.0]

- New method for referencing destinations by number; an idea proposed by Lars Hellström in the mailing list LATEX-L.
- Options name and num added.

[2007/11/11 v2.1]

• Use of package pdftexcmds for LuaT_FX support.

[2008/08/08 v2.2]

 \bullet Support for package bookmark added.

[2011/05/13 v2.3]

- Fix for \Hy@DestName if the destination name contains special characters.
- Fix for option name and package bookmark.

[2016/05/16 v2.4]

• Documentation updates.

[2016/05/21 v2.5]

• LuaTeX compatibility

[2019/12/29 v2.6]

• use iftex package.

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