

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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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 `ifpdf` ([3]).
- pdfTeX 1.30.0 or newer.
- pdfTeX in PDF mode.
- ϵ -TeX extensions enabled.
- Probably an additional compile run of pdfLaTeX 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 `pdfTeX` 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.

2 Implementation

2.1 Identification

```

1 (*package)
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{hypdestopt}%
4   [2006/06/01 v2.0 Hyperref destination optimizer (H0)]%
```

2.2 Options

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{%
8   \ifHypDest@Verbose
9     \PackageInfo{hypdestopt}{#1}%
10  \fi
11 }
```

2.2.2 Options 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 pdfTeX must running in PDF mode.

```
16 \RequirePackage{ifpdf}
17 \ifpdf
18 \else
19   \PackageError{hypdestopt}{%
20     This package requires pdfTeX in PDF mode%
21   }\@ehc
22   \expandafter\endinput
23 \fi
```

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

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

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

```
31 \begingroup\expandafter\expandafter\expandafter\endgroup
32 \expandafter\ifx\csname numexpr\endcsname\relax
33   \PackageError{hypdestopt}{%
34     e-TeX features are missing%
35   }\@ehc
36   \expandafter\endinput
37 \fi
```

Package `alphalph` provides `\newalphalph` since version 2006/05/30 v1.4.

```
38 \ifHypDest@name
39   \RequirePackage{alphalph}[2006/05/30]%
40 \fi
41 \RequirePackage{auxhook}
```

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.

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

2.5 Generation of destination names

Counter `HypDest` is used for identifying destinations.

```
52 \newcounter{HypDest}
53 \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.

```
54 \def\HypDest@HexChar#1{%
55 \ifcase#1\or
```

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

```
56 01\or 02\or 03\or 04\or 05\or 06\or 07\or
```

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

```
57 08\or 09\or 0A\or 0B\or 0C\or 0E\or 0F\or
58 10\or 11\or 12\or 13\or 14\or 15\or 16\or 17\or
59 18\or 19\or 1A\or 1B\or 1C\or 1D\or 1E\or 1F\or
60 20\or 21\or 22\or 23\or 24\or 25\or 26\or 27\or
```

Omit left and right parentheses (40/^^28, 41/^^39), they need quoting in general.

```
61 2A\or 2B\or 2C\or 2D\or 2E\or 2F\or
62 30\or 31\or 32\or 33\or 34\or 35\or 36\or 37\or
63 38\or 39\or 3A\or 3B\or 3C\or 3D\or 3E\or 3F\or
64 40\or 41\or 42\or 43\or 44\or 45\or 46\or 47\or
65 48\or 49\or 4A\or 4B\or 4C\or 4D\or 4E\or 4F\or
66 50\or 51\or 52\or 53\or 54\or 55\or 56\or 57\or
```

Omit backslash (92/^^5C), it needs quoting.

```
67 58\or 59\or 5A\or 5B\or 5D\or 5E\or 5F\or
68 60\or 61\or 62\or 63\or 64\or 65\or 66\or 67\or
69 68\or 69\or 6A\or 6B\or 6C\or 6D\or 6E\or 6F\or
70 70\or 71\or 72\or 73\or 74\or 75\or 76\or 77\or
71 78\or 79\or 7A\or 7B\or 7C\or 7D\or 7E\or 7F\or
72 80\or 81\or 82\or 83\or 84\or 85\or 86\or 87\or
73 88\or 89\or 8A\or 8B\or 8C\or 8D\or 8E\or 8F\or
74 90\or 91\or 92\or 93\or 94\or 95\or 96\or 97\or
75 98\or 99\or 9A\or 9B\or 9C\or 9D\or 9E\or 9F\or
76 A0\or A1\or A2\or A3\or A4\or A5\or A6\or A7\or
77 A8\or A9\or AA\or AB\or AC\or AD\or AE\or AF\or
78 B0\or B1\or B2\or B3\or B4\or B5\or B6\or B7\or
79 B8\or B9\or BA\or BB\or BC\or BD\or BE\or BF\or
80 C0\or C1\or C2\or C3\or C4\or C5\or C6\or C7\or
81 C8\or C9\or CA\or CB\or CC\or CD\or CE\or CF\or
82 D0\or D1\or D2\or D3\or D4\or D5\or D6\or D7\or
83 D8\or D9\or DA\or DB\or DC\or DD\or DE\or DF\or
84 E0\or E1\or E2\or E3\or E4\or E5\or E6\or E7\or
85 E8\or E9\or EA\or EB\or EC\or ED\or EE\or EF\or
86 F0\or F1\or F2\or F3\or F4\or F5\or F6\or F7\or
```

Avoid 255 (0xFF) to get rid of a possible unicode marker at the begin of the string.

```
87 F8\or F9\or FA\or FB\or FC\or FD\or FE%
88 \fi
89 }%
```

`HypDest@HexString` Now package `alphalph` comes into play. `\HypDest@HexString` is defined and converts a positive number into a string, given in hexadecimal representation.

```
90 \newalphalph\HypDest@HexString\HypDest@HexChar{250}%
```

`\theHypDest` For use, the hexadecimal string is converted back.

```
91 \renewcommand*{\theHypDest}{%
92 \pdfunescapehex{\HypDest@HexString{\value{HypDest}}}%
93 }%
```

With option `num` we use the number directly.

```
94 \else
95 \renewcommand*{\theHypDest}{%
```

```

96     \number\value{HypDest}%
97   }%
98 \fi

```

2.6 Assign destination names

`\HypDest@Prefix` The new destination names are remembered in macros whose names start with prefix `\HypDest@Prefix`.

```

99 \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.

```

100 \def\HypDest@Use#1{%
101   \begingroup
102   \edef\x{%
103     \expandafter\noexpand
104     \csname\HypDest@Prefix\pdfunescapehex{#1}\endcsname
105   }%
106   \expandafter\ifx\x\relax
107     \stepcounter{HypDest}%
108     \expandafter\xdef\x{\theHypDest}%
109     \let\on@line\@empty
110     \ifHypDest@name
111       \HypDest@VerboseInfo{%
112         Use: (\pdfunescapehex{#1}) -\string> %
113         0x\pdfescapehex{x} (\number\value{HypDest})}%
114       }%
115     \else
116       \HypDest@VerboseInfo{%
117         Use: (\pdfunescapehex{#1}) -\string> num \x
118       }%
119     \fi
120   \fi
121   \endgroup
122 }

```

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

```

123 \AtBeginDocument{%
124   \let\HypDest@Use\@gobble
125 }

```

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

```

126 \def\HypDest@MarkUsed#1{%
127   \HypDest@VerboseInfo{%
128     MarkUsed: (#1)%
129   }%
130   \if@files
131     \immediate\write\@auxout{%
132       \string\HypDest@Use{\pdfescapehex{#1}}%
133     }%
134   \fi
135 }%

```

2.7 Redefinition of `hyperref`'s hooks

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

```

136 \HypDest@PrependDocument{%

```

Check hyperref version.

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

2.7.1 Destination setting

```
142 \ifHypDest@name
143   \let\HypDest@Org@DestName\Hy@DestName
144   \renewcommand*{\Hy@DestName}[2]{%
145     \ifundefined{\HypDest@Prefix#1}{%
146       \HypDest@VerboseInfo{%
147         DestName: (#1) unused%
148       }%
149     }{%
150       \HypDest@Org@DestName{\csname\HypDest@Prefix#1\endcsname}{#2}%
151       \HypDest@VerboseInfo{%
152         DestName: (#1) %
153         0x\pdfescapehex{\csname\HypDest@Prefix#1\endcsname}%
154       }%
155     }%
156   }%
157 \else
158   \renewcommand*{\Hy@DestName}[2]{%
159     \ifundefined{\HypDest@Prefix#1}{%
160       \HypDest@VerboseInfo{%
161         DestName: (#1) unused%
162       }%
163     }{%
164       \pdfdest num\csname\HypDest@Prefix#1\endcsname#2\relax
165       \HypDest@VerboseInfo{%
166         DestName: (#1) %
167         num \csname\HypDest@Prefix#1\endcsname
168       }%
169     }%
170   }%
171 \fi
```

2.7.2 Links

```
172 \let\HypDest@Org@StartlinkName\Hy@StartlinkName
173 \ifHypDest@name
174   \renewcommand*{\Hy@StartlinkName}[2]{%
175     \HypDest@MarkUsed{#2}%
176     \HypDest@Org@StartlinkName{#1}{%
177       \ifundefined{\HypDest@Prefix#2}{%
178         #2%
179       }{%
180         \csname\HypDest@Prefix#2\endcsname
181       }%
182     }%
183   }%
184 \else
185   \renewcommand*{\Hy@StartlinkName}[2]{%
186     \HypDest@MarkUsed{#2}%
187     \ifundefined{\HypDest@Prefix#2}{%
188       \HypDest@Org@StartlinkName{#1}{#2}%
189     }{%
190       \pdfstartlink attr{#1}%
191       goto num\csname\HypDest@Prefix#2\endcsname
192     }%
193   }%
194 \fi
```

```

193     }%
194   }%
195 \fi

```

2.7.3 Outlines

```

196 \let\HypDest@Org@OutlineName\Hy@OutlineName
197 \ifHypDest@name
198   \renewcommand*{\Hy@OutlineName}[4]{%
199     \HypDest@Org@OutlineName{#1}{%
200       \@ifundefined{\HypDest@Prefix#2}{%
201         #2%
202       }{%
203         \csname\HypDest@Prefix#2\endcsname
204       }%
205     }{#3}{#4}%
206   }%
207 \else
208   \renewcommand*{\Hy@OutlineName}[4]{%
209     \@ifundefined{\HypDest@Prefix#2}{%
210       \HypDest@Org@OutlineName{#1}{#2}{#3}{#4}%
211     }{%
212       \pdfoutline goto num\csname\HypDest@Prefix#2\endcsname
213         count#3{#4}%
214     }%
215   }%
216 \fi

```

Because `\Hy@OutlineName` is called after the `.out` file is written in the previous run. Therefore we mark the destination earlier in `\@@writetorep`.

```

217 \let\HypDest@Org@@writetorep\@@writetorep
218 \renewcommand*{\@@writetorep}[5]{%
219   \begingroup
220     \edef\Hy@tempa{#5}%
221     \ifx\Hy@tempa\Hy@bookmarkstype
222       \HypDest@MarkUsed{#3}%
223     \fi
224   \endgroup
225   \HypDest@Org@@writetorep{#1}{#2}{#3}{#4}{#5}%
226 }%
227 }
228 </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:macros/latex/contrib/oberdiek/oberdiek-tds.zip](#)

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

¹<http://ftp.ctan.org/tex-archive/>

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
```

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/
```

3.3 Package installation

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

```
tex hypdestopt.dtx
```

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

```
hypdestopt.sty → tex/latex/oberdiek/hypdestopt.sty
hypdestopt.pdf → doc/latex/oberdiek/hypdestopt.pdf
hypdestopt.dtx → source/latex/oberdiek/hypdestopt.dtx
```

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 (`teTeX`, `mikTeX`, ...) relies on file name databases, you must refresh these. For example, `teTeX` users run `texhash` or `mktexlsr`.

3.5 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 hypdestopt.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{hypdestopt.dtx}
```

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

\PassOptionsToClass{a4paper}{article}

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

\Hy@OutlineName	196, 198, 208	O	
\Hy@StartlinkName	172, 174, 185	\on@line	109
\Hy@tempa	220, 221	P	
\HypDest@HexChar	54, 90	\PackageError	19, 26, 33, 138
\HypDest@HexString	90, 90, 92	\PackageInfo	9
\HypDest@MarkUsed	126, 175, 186, 222	\pdfdest	164
\HypDest@Namefalse	13	\pdfescapehex	113, 132, 153
\HypDest@Nametrue	14	\pdfoutline	212
\HypDest@Org@Writetorep	217, 225	\pdfstartlink	190
\HypDest@Org@DestName	143, 150	\pdfunescapehex	92, 104, 112, 117
\HypDest@Org@OutlineName	196, 199, 210	\ProcessOptions	15
\HypDest@Org@StartlinkName	172, 176, 188	\providecommand	50
\HypDest@Prefix	99, 104, 145, 150, 153, 159, 164, 167, 177, 180, 187, 191, 200, 203, 209, 212	\ProvidesPackage	3
\HypDest@PrependDocument	42, 136	R	
\HypDest@Use	50, 100, 124, 132	\renewcommand	91, 95, 144, 158, 174, 185, 198, 208, 218
\HypDest@VerboseInfo	7, 111, 116, 127, 146, 151, 160, 165	\RequirePackage	16, 39, 41
\HypDest@Verbosetrue	6	S	
		\stepcounter	107
I		T	
\if@filesw	130	\the	46
\ifcase	55	\theHypDest	91, 95, 108
\ifHypDest@name	12, 38, 53, 110, 142, 173, 197	\toks	44, 45, 46
\ifHypDest@Verbose	5, 8	\tw@	45, 46
\ifpdf	17	V	
\ifx	25, 32, 106, 221	\value	92, 96, 113
\immediate	131	W	
N		\write	131
\NeedsTeXFormat	2	X	
\newalphalph	90	\x	102, 106, 108, 113, 117
\newcounter	52	Z	
\newif	5, 12	\z@	44, 46
\number	96, 113		