

The pdfmanagement-firstaid package – temporary patches and package replacements

L^AT_EX PDF management testphase bundle

The L^AT_EX Project*

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1 pdfmanagement-firstaid documentation

This code is temporary! It tries to patch commands of other packages or even replace package which are incompatible with the pdfmanagement, to remove clashes and test if everything works as expected. This code should disappear when packages adapt to the central interfaces.

The package contains an number of sections for various packages. Every section can be disabled in (the first) `\DocumentMetadata` with `debug={firstaidoff={name1,name2,...},...}`.

```
1 <*package>
2 \ProvidesExplPackage{pdfmanagement-firstaid}{2022-11-03}{0.95t}
3   {LaTeX PDF management testphase bundle / firstaid-patches}
4
5 <@@=pdfmanagement>
6 \clist_map_inline:nn {pgf,transparent,xmp,pdfjscape,xcolor,color,beamer,output,colorspace,fontenc}
7   {
8     \bool_new:c      { g__pdfmanagement_firstaid_#1_bool }
9     \bool_gset_true:c { g__pdfmanagement_firstaid_#1_bool }
10  }
11 \clist_map_inline:Nn \g__pdfmanagement_firstaidoff_clist
12   {
13     \bool_if_exist:cT { g__pdfmanagement_firstaid_#1_bool }
14     {
15       \bool_gset_false:c { g__pdfmanagement_firstaid_#1_bool }
16     }
17  }
18 \msg_new:nnn { pdfmanagement } { firstaid }
19   { loading~pdfmanagement~firstaid~code~for~#1 }
20 \msg_new:nnn { pdfmanagement } { firstaid-changed }
21   { package~#1~has~changed.-Check~if~patch~is~still~valid! }
22 \msg_new:nnn { pdfmanagement } { firstaid-disabled }
23   { The~loading~of~package~#1~is~disabled.\\
24     It~is~not~compatible~with~the~PDF~management. }
25 \msg_new:nnn { pdfmanagement } { firstaid-too-old }
26   { Package~#1~is~too~old~and~not~compatible.\\
```

*E-mail: latex-team@latex-project.org

```

27         Get~at~least~version~#2.}
28

```

1.1 Fontspec

When using luaLaTeX opacity is broken (issue #30) as fontspec/luatfloat doesn't use the pdfmanagement but write to ExtGState directly To repair this some new lua code is needed. This also improves the color parsing and allows to use cmyk and spot colors as font colors. It is also needed to use a patch version of `fontspec-luatex.sty` to slightly change the way how the Opacity and Color key are handled. The patch is only executed if luatfloat is new enough.

```

29 \sys_if_engine_luatex:T
30   {
31     \lua_now:n
32     {
33       if-not~luatfloat.set_transparent_colorstack~
34       then~
35         tex.print("\bool_gset_false:N\g__pdfmanagement_firstaid_fontspec_bool")~
36       end
37     }
38     \bool_if:NT \g__pdfmanagement_firstaid_fontspec_bool
39     {
40       \msg_info:nnn{pdfmanagement}{firstaid}{fontspec}
41       \file_if_exist:nT { luatfloat-l3color-tmp.lua }
42       {
43         \lua_load_module:n { luatfloat-l3color-tmp.lua }
44       }
45
46       \declare@file@substitution{fontspec-luatex.sty}{fontspec-luatex-tmp-ltx.sty}
47       \AddToHook{package/fontspec/after}
48       {
49         \str_if_eq:vnF{ver@fontspec.sty}{2022/01/15~v2.8a~Font~selection~for~XeLaTeX~and~
50         { \msg_warn:nnn{pdfmanagement}{firstaid-changed}{fontspec}}
51       }
52     }
53   }

```

1.2 Output routine

The patches for the LaTeX output routine commands for the tagging of the header/footer, the suppressing of links and the patch to multicol for the para tagging by default, but must be requested with the key `testphase=new-or-1`. But until latex-lab has been updated we must ensure that they are loaded with the various phases.

```

54 \bool_if:NT \g__pdfmanagement_firstaid_output_bool
55   {

```

This catches also phase-II and tagpdf.

```

56     \file_if_exist:nF {new-or-1-latex-lab-testphase.ltx}
57     {
58       \AddToHook{package/latex-lab-testphase-new-or/after}
59       { \RequirePackage{output-patches-tmp-ltx}}

```

This is for phase-I

```
60     \AddToHook{package/tagpdf/after}
61     {\RequirePackage{output-patches-tmp-ltx}}
62   }
63 }
```

1.3 beamer

beamer made use of the now unsupported syntax `linkbordercolor={.5 .5 .5}`. This has been changed so the patch has been removed.

1.4 color

color is not incompatible, but the new hyperref driver makes use of l3color to set the colors. It is therefore necessary to patch some internal color commands, so that colors defined with its `\definecolor` command are known to l3color and so hyperref. This only supports the color models from l3color (which covers all standard model of the color package). The named model is mapped to `\color_set:nn`.

This patch serves also as test to check if this change can be safely added to color later.

```
64 \bool_if:NT \g__pdfmanagement_firstaid_color_bool
65 {
66   \declare@file@substitution{color.sty}{color-ltx.sty}
67 }
```

1.5 xcolor

xcolor is not incompatible, but the new hyperref driver makes use of l3color to set the colors. It is therefore necessary to patch xcolor, so that colors defined with its `\definecolor` command are known to l3color and so hyperref. This only supports the color model from l3color. Colors defined with the models `cm` and `tHsb` are silently ignored.

The named model is mapped to `\color_set:nn`.

```
68 \bool_if:NT \g__pdfmanagement_firstaid_xcolor_bool
69 {
70   \AddToHook
71   {
72     package/xcolor/after
73   }
74   {\RequirePackage{xcolor-patches-tmp-ltx}}
75 }
```

1.6 pgf

In pgf, resource management is set up in the file `pgfutil-common.tex`. This then provides three functions for adding to the resources, all of which are objects:

- `\pgfutil@addpdfresource@extgs`: Extended graphics state
- `\pgfutil@addpdfresource@colorspaces`: Color spaces
- `\pgfutil@addpdfresource@patterns`: Patterns

These resource dictionaries are used by adding entries in a cumulative sense; the macro layer deals with ensuring that each entry is only given once. Note that the objects themselves must be given only once for each page.

To support these functions, there are a series of set-up macros which install these resources. That has to take place for every page: the exact route therefore depends on the driver.

For the pdfmanagement project we need to avoid that pgf interferes in ExtGState, ColorSpace and Pattern (Shadings are added to the xform resources and so probably unproblematic for now). The actual patch is in a file hook guarded by the boolean, the rest of the code is always defined.

```

76
77 \bool_if:NT \g__pdfmanagement_firstaid_pgf_bool
78   {
79     \msg_info:nnn{pdfmanagement }{firstaid}{pgf}
80     \AddToHook
81       {
82         file/pgfrcs.sty/after
83       }
84     {
85       \cs_set_eq:NN
86         \__pdfmanagement_pgfori_pgfutil@setuppdfresources
87         \pgfutil@setuppdfresources
88       \def\pgfutil@setuppdfresources
89         {
90           \pdfmanagement_if_active:TF
91             {
92               \__pdfmanagement_pgf_sys_setuppdfresources_plain:
93             }
94             {
95               \__pdfmanagement_pgfori_pgfutil@setuppdfresources
96             }
97           }
98     }
99   }
100 %\def\pgfutil@addpdfresource@extgs#1{\pgf@sys@addpdfresource@extgs@plain{#1}}
101 %\def\pgfutil@addpdfresource@colorspaces#1{\pgf@sys@addpdfresource@colorspaces@plain{#1}}
102 %\def\pgfutil@addpdfresource@patterns#1{\pgf@sys@addpdfresource@patterns@plain{#1}}
103 %\def\pgfutil@setuppdfresources{\pgf@sys@setuppdfresources@plain}
104 % \pgf@sys@pdf@possible@resources %used in xform
105 %Trying to patch pgf ..
106 \cs_new_protected:Npn \__pdfmanagement_pgf_sys_setuppdfresources_plain:
107   {
108     %objects are already created ...
109     \def\pgf@sys@pdf@possible@resources
110       {
111         /ColorSpace~\pdf_object_ref:n {__pdf/Page/Resources/ColorSpace}
112         /Pattern   ~\pdf_object_ref:n {__pdf/Page/Resources/Pattern}
113         /ExtGState ~\pdf_object_ref:n {__pdf/Page/Resources/ExtGState}
114       }
115     \let\pgf@sys@pdf@check@resources=\relax%
116     %not sure if needed, but perhaps the lists are used somewhere else ...
117     \let\pgf@sys@pgf@resource@list@extgs=\pgfutil@empty%
118     \let\pgf@sys@pgf@resource@list@patterns=\pgfutil@empty%

```

```

119 \let\pgf@sys@pgf@resource@list@colorspaces=\pgfutil@empty%
120 % the commands to add page resources
121 \def\pgf@sys@addpdfresource@extgs@plain##1
122 {
123   %\exp_after:wN %for transparent which passes a command
124   \__pdfmanagement_patch_pgfextgs:w ##1\q_stop
125 }
126 \def\pgf@sys@addpdfresource@patterns@plain##1
127 {
128   \__pdfmanagement_patch_pgfpatterns:w ##1\q_stop
129 }
130 \def\pgf@sys@addpdfresource@colorspaces@plain##1
131 {
132   \__pdfmanagement_patch_pgfcolorspaces:w ##1\q_stop
133 }
134 }
135
136 %\AtEndPreamble{\pgfutil@setuppdfresources}
137 % helper commands as pgf doesn't pass resources as two arguments
138 % code to add to the resources existing stuff in the format "/name value":
139 \cs_new:Npn \__pdfmanagement_split_dict_entry_aux:NNw #1 #2 /#3-#4\q_stop
140 {
141   \tl_set:Nn #1 {#3}
142   \tl_set:Nn #2 {#4}
143 }
144
145 \cs_generate_variant:Nn \tl_trim_spaces:n{V}
146 \cs_generate_variant:Nn \pdfmanagement_add:nex{nex}
147 \cs_new:Npn \__pdfmanagement_patch_pgfextgs:w #1/#2<<#3>>#4\q_stop
148 {
149   \tl_set:Nx\l_tmpa_tl{#2}
150   \pdfmanagement_add:nex
151     {Page/Resources/ExtGState}{\tl_trim_spaces:V\l_tmpa_tl}{<<#3 #4>>}
152 }
153 \cs_new:Npn \__pdfmanagement_patch_pgfpatterns:w #1/#2\space#3\q_stop
154 {
155   \pdfmanagement_add:nex
156     {Page/Resources/Pattern}{\tl_trim_spaces:n{#2}}{#3}
157 }
158 \cs_new:Npn \__pdfmanagement_patch_pgfcolorspaces:w #1/#2[#3]#4\q_stop
159 {
160   \pdfmanagement_add:nex
161     {Page/Resources/ColorSpace}{\tl_trim_spaces:n{#2}}{[#3]}
162 }
163

```

1.7 transparent

We check if the new version is used and issue a warning otherwise

```

164 \bool_if:NT \g__pdfmanagement_firstaid_transparent_bool
165 {
166   \AddToHook{package/transparent/after}
167   {
168     \@ifpackagelater{transparent}{2022-10-27}{}

```

```

169     {
170       \msg_warning:nnnn{pdfmanagement}{firstaid-too-old}
171       {transparent}
172       {1.5~from~2022-10-27}
173     }
174   }
175 }

```

1.8 pdfscape

We check if the new version is used and issue a warning otherwise

```

176 \bool_if:NT \g__pdfmanagement_firstaid_pdfscape_bool
177 {
178   \AddToHook{package/pdfscape/after}
179   {
180     \@ifpackagelater{pdfscape}{2022-10-27}{
181       {
182         \msg_warning:nnnn{pdfmanagement}{firstaid-too-old}
183         {pdfscape}
184         {0.13~from~2022-10-27}
185       }
186     }
187 }

```

1.9 xmp

This handles the new xmp code.

```

188 \bool_if:NT \g__pdfmanagement_firstaid_xmp_bool
189 {
190   \disable@package@load{hyperxmp}{\msg_warning:nnn{pdfmanagement}{firstaid-disabled}{hyperxmp}}
191   \disable@package@load{pdfx} {\msg_warning:nnn{pdfmanagement}{firstaid-disabled}{pdfx}}
192   \AddToHook{package/doclicense/after}
193   {
194     \AtBeginDocument
195     {
196       \hypersetup
197       {
198         pdfcopyright = {\doclicenseLongTextForHyperref},
199         pdflicenseurl = {\doclicenseURL},
200       }
201     }
202   }
203 }
204 \</package>

```

1.10 colorspace

This is rather difficult as no real places to inject patches at first a try to avoid that its ExtGState is missing: it can not be avoided to recreate the objects (and so to get duplicates) as colorspace uses temporary macros whose contents is lost.

```

205 \<package>
206 \bool_if:NT \g__pdfmanagement_firstaid_colorspace_bool

```

```

207 {
208   \AddToHook
209   {
210     package/colorspace/after
211   }
212   {\RequirePackage{colorspace-patches-tmp-ltx}}
213 }
214 </package>

```

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