

# The pdfmanagement-firstaid package – temporary patches and package replacements L<sup>A</sup>T<sub>E</sub>X PDF management testphase bundle

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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}{2022-03-16}{0.95k}
3   {LaTeX PDF management testphase bundle / firstaid-patches}
4
5 <@@=pdfmanagement>
6 \clist_map_inline:nn {pgf,transparent,hyperxmp,pdfjscape,xcolor,color,beamer,output}
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 }
```

### 1.1 Output routine

This load as few patches for the LaTeX output routine commands. They add hooks for the interruption of links and for paragraph tagging.

```
20 \bool_if:NT \g__pdfmanagement_firstaid_output_bool
```

---

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```

21 {
22   \RequirePackage{output-patches-tmp-ltx}
23 }

```

## 1.2 beamer

beamer makes use of the now unsupported syntax `linkbordercolor={.5 .5 .5}`. To avoid an error we define this color as a name.

```

24 \bool_if:NT \g__pdfmanagement_firstaid_beamer_bool
25 {
26   \color_set:nnn{.5~.5~.5}{rgb}{0.5,0.5,0.5}
27 }

```

## 1.3 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.

```

28 \bool_if:NT \g__pdfmanagement_firstaid_color_bool
29 {
30   \declare@file@substitution{color.sty}{color-ltx.sty}
31 }

```

## 1.4 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`.

```

32 \bool_if:NT \g__pdfmanagement_firstaid_xcolor_bool
33 {
34   \AddToHook
35   {
36     package/xcolor/after
37   }
38   {\RequirePackage{xcolor-patches-tmp-ltx}\XC@@names}
39 }

```

## 1.5 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.

```

40
41 \bool_if:NT \g__pdfmanagement_firstaid_pgf_bool
42 {
43   \msg_info:nnn{pdfmanagement }{firstaid}{pgf}
44   \AddToHook
45   {
46     file/pgfrcs.sty/after
47   }
48   {
49     \cs_set_eq:NN
50     \__pdfmanagement_pgfori_pgfutil@setuppdfresources
51     \pgfutil@setuppdfresources
52     \def\pgfutil@setuppdfresources
53     {
54       \pdfmanagement_if_active:TF
55       {
56         \__pdfmanagement_pgf_sys_setuppdfresources_plain:
57       }
58       {
59         \__pdfmanagement_pgfori_pgfutil@setuppdfresources
60       }
61     }
62   }
63 }
64 %\def\pgfutil@addpdfresource@extgs#1{\pgf@sys@addpdfresource@extgs@plain{#1}}
65 %\def\pgfutil@addpdfresource@colorspaces#1{\pgf@sys@addpdfresource@colorspaces@plain{#1}}
66 %\def\pgfutil@addpdfresource@patterns#1{\pgf@sys@addpdfresource@patterns@plain{#1}}
67 %\def\pgfutil@setuppdfresources{\pgf@sys@setuppdfresources@plain}
68 % \pgf@sys@pdf@possible@resources %used in xform
69 %Trying to patch pgf ..
70 \cs_new_protected:Npn \__pdfmanagement_pgf_sys_setuppdfresources_plain:
71 {
72   %objects are already created ...
73   \def\pgf@sys@pdf@possible@resources
74   {
75     /ColorSpace~\pdf_object_ref:n {\__pdf/Page/Resources/ColorSpace}
76     /Pattern ~\pdf_object_ref:n {\__pdf/Page/Resources/Pattern}
77     /ExtGState ~\pdf_object_ref:n {\__pdf/Page/Resources/ExtGState}
78   }
79   \let\pgf@sys@pdf@check@resources=\relax%
80   %not sure if needed, but perhaps the lists are used somewhere else ...

```

```

81 \let\pgf@sys@pgf@resource@list@extgs=\pgfutil@empty%
82 \let\pgf@sys@pgf@resource@list@patterns=\pgfutil@empty%
83 \let\pgf@sys@pgf@resource@list@colorspaces=\pgfutil@empty%
84 % the commands to add page resources
85 \def\pgf@sys@addpdfresource@extgs@plain##1
86 {
87     %\exp_after:wN %for transparent which passes a command
88     \__pdfmanagement_patch_pgftextgs:w ##1\q_stop
89 }
90 \def\pgf@sys@addpdfresource@patterns@plain##1
91 {
92     \__pdfmanagement_patch_pgfpatterns:w ##1\q_stop
93 }
94 \def\pgf@sys@addpdfresource@colorspaces@plain##1
95 {
96     \__pdfmanagement_patch_pgfcolorspaces:w ##1\q_stop
97 }
98 }
99
100 %\AtEndPreamble{\pgfutil@setuppdfresources}
101 % helper commands as pgf doesn't pass resources as two arguments
102 % code to add to the resources existing stuff in the format "/name value":
103 \cs_new:Npn \__pdfmanagement_split_dict_entry_aux:NNw #1 #2 /#3~#4\q_stop
104 {
105     \tl_set:Nn #1 {#3}
106     \tl_set:Nn #2 {#4}
107 }
108
109 \cs_generate_variant:Nn \tl_trim_spaces:n{V}
110 \cs_generate_variant:Nn \pdfmanagement_add:nnn {nex}
111 \cs_new:Npn \__pdfmanagement_patch_pgftextgs:w #1/#2<<#3>>#4\q_stop
112 {
113     \tl_set:Nx\l_tmpa_tl{#2}
114     \pdfmanagement_add:nex
115     {Page/Resources/ExtGState}{\tl_trim_spaces:V\l_tmpa_tl}{<<#3 #4>>}
116 }
117 \cs_new:Npn \__pdfmanagement_patch_pgfpatterns:w #1/#2\space#3\q_stop
118 {
119     \pdfmanagement_add:nex
120     {Page/Resources/Pattern}{\tl_trim_spaces:n{#2}}{#3}
121 }
122 \cs_new:Npn \__pdfmanagement_patch_pgfcolorspaces:w #1/#2[#3]#4\q_stop
123 {
124     \pdfmanagement_add:nex
125     {Page/Resources/ColorSpace}{\tl_trim_spaces:n{#2}}{[#3]}
126 }
127

```

## 1.6 transparent

We simply replace by the new version.

```

128 \bool_if:NT \g__pdfmanagement_firstaid_transparent_bool
129 {
130     \declare@file@substitution{transparent.sty}{transparent-ltx.sty}

```

```
131 }
```

## 1.7 pdfscape

We simply replace by the new version.

```
132 \bool_if:NT \g__pdfmanagement_firstaid_pdfscape_bool
133 {
134   \declare@file@substitution{pdfscape.sty}{pdfscape-ltx.sty}
135 }
```

## 1.8 hyperxmp

We add some code at the end of hyperxmp.sty.

```
136 \bool_if:NT \g__pdfmanagement_firstaid_hyperxmp_bool
137 {
138   \AddToHook
139   {
140     file/hyperxmp.sty/after
141   }
142   {\RequirePackage{hyperxmp-patches-tmp-ltx}}
143 }
144 \</package>
```

## 1.9 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.

```
145 \<package>
146 \<@=pdf>
147 % this must be earlier, to avoid problems with luatex which has two pageresources
148 % lua/tex
149 \hook_gput_code:nnn {begindocument} {pdf}
150 {
151   \tl_if_exist:NT \spc@op
152   {
153     \def\spc@Pageresources#1{}
154   }
155 }
156 }
157
158 \hook_gput_code:nnn {begindocument/end} {pdf}
159 {
160   \tl_if_exist:NT \spc@op
161   {
162     \__pdf_backend_object_new:nn {__spc_extgstate_op_false}{dict}
163     \__pdf_backend_object_write:nn
164     {__spc_extgstate_op_false}
165     {/Type /ExtGState~/op~false~/OP~false}
166     \pdfmanagement_add:nnn
167     {Page/Resources/ExtGState}
168     {SPCKo}
```

```

169         {\_pdf_backend_object_ref:n {\_spc_extgstate_op_false}}
170     \_pdf_backend_object_new:nn {\_spc_extgstate_op_true0}{dict}
171     \_pdf_backend_object_write:nn
172         {\_spc_extgstate_op_true0}
173         {/Type /ExtGState~/op~true~/OP~true~/OPM~0}%
174     \pdfmanagement_add:nnn
175         {Page/Resources/ExtGState}
176         {SPCmz}
177         {\_pdf_backend_object_ref:n {\_spc_extgstate_op_true0}}
178     \_pdf_backend_object_new:nn {\_spc_extgstate_op_true1}{dict}
179     \_pdf_backend_object_write:nn
180         {\_spc_extgstate_op_true1}
181         {/Type /ExtGState~/op~true~/OP~true~/OPM~1}%
182     \pdfmanagement_add:nnn
183         {Page/Resources/ExtGState}
184         {SPCOp}
185         {\_pdf_backend_object_ref:n {\_spc_extgstate_op_true1}}
186     }
187 }
188 </package>

```

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