Improving “lscape” and “pdflscape”

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Package lscapeenhanced has started as hack module of the KOMA-Script package scrhack years ago to fix an issue when using package lscape with KOMA-Script packages scrlayer or scrlayer-scrpage. This became necessary because package lscape has a somehow strange handling of `\textheight` resp. `\textwidth` at landscape pages. This is not only an issue with KOMA-Script but also other packages, e.g., showframe. Package lscapeenhanced solved this issue. This is a really small change and best would be, if the lscape author would at least include this change optionally.

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1 What is the Potential Issue With lscape?

The lscape package defines a `landscape` environment to set the page contents, but not the header or footer in landscape mode. Inside this environment, `\textheight` is set to the value of `\textwidth`, but `\textwidth` is not set to the former value of `\textheight`. This is inconsistent. As far as I know, `\textwidth` is left unchanged because setting it to `\textheight` could interfere with other packages or user commands. But changing `\textheight` also has this potential, and indeed it breaks, for example, showframe and scrlayer and in consequence also scrlayer-scrpage. Thus it would be best if `\textheight` too remained unchanged. lscapeenhanced uses the xpatch package (see [Gre20]) to modify the `landscape` environment's start macro `\landscape` appropriately.

*Repository and bug reports: https://github.com/komascript/third-party-enhancements

Incidentally, the pdflscape package also uses lscape, so lscapeenhanced affects the functioning of this package too.

2 How to use lscapeenhanced

In the document preamble of your document you just can replace

```
\usepackage{lscape}
```

by

```
\usepackage{lscapeenhanced}
```

to load package lscapeenhanced. This does still also load package lscape but additionally patches one command of lscape to avoid the issues shown in section 1.

If you want you can alternatively also load both packages explicitly, either lscape before lscapeenhanced or—if you want—lscapeenhanced before lscape. This is also useful, if you use a package, that uses lscape itself, i.e., pdflscape.

`pdflscape` (*opt.*) In case of pdflscape you can alternatively replace

```
\usepackage{pdflscape}
```

by

```
\usepackage[pdflscape]{lscapeenhanced}
```

in which case lscapeenhanced would load pdflscape.

When using a class that uses lscape, the correct operation can be ensured with

```
\AddToHook{package/lscape/after}{\RequirePackage{lscapeenhanced}}
```

even before `\documentclass`. This requires at least LaTeX 2020/10/01. For older versions of LaTeX you can use

```
\RequirePackage{scrlfile}
\AfterPackage{lscape}{\RequirePackage{lscapeenhanced}}
```

also before `\documentclass`. This would require the KOMA-Script package scrlfile.

The user interface of lscapeenhanced is the same as of lscape resp. pdflscape, see [Car20]. The only difference is, that the issue explained in section 1 has been fixed.

`lscape` (*opt.*) To deactivate the changes of lscapeenhanced you can use option `lscape=false`. This option can also be changed using

```
\SetKeys[lscapeenhanced]{lscape=false}
```

or

```
\SetKeys[lscapeenhanced]{lscape=true}
```

after loading the package.

3 Implementation

lscapeenhanced uses the new LaTeX kernel feature of key-value-options introduced in [TLT22]. So we need at least LaTeX 2022-06-01:

```
\ifnum 0=\ifcsname IfFormatAtLeastTF\endcsname
    \IfFormatAtLeastTF{2022-06-01}{1}{0}%
  \else
    0%
  \fi\relax
  \PackageError{lscapeenhanced}{LaTeX kernel too old}{%
    The package needs at least LaTeX 2022-06-01.\MessageBreak
    This error is fatal. Loading will be aborted.%
  }%
  \endinput
\fi
\ExplSyntaxOn
```

pdflscape (*opt.*)
\@lscapeenhanced@req@packages

If the option is used (without value!) it just changes the macro indicating the package that should also be loaded. Package authors could also define the internal macro \@lscapeenhanced@req@packages.

```
\providecommand*{\@lscapeenhanced@req@packages}{lscape}
\DeclareKeys{%
  pdflscape .code              = {
    \renewcommand*{\@lscapeenhanced@req@packages}{lscape,pdflscape}
                                 },
  pdflscape .usage             = load,
  pdflscape .value_forbidden:n = true
}
```

lscape (*opt.*)
\if@lscapeenhanced@lscape

A switch to allow to activate and deactivate usage of the change.

```
\newif\if@lscapeenhanced@lscape \@lscapeenhanced@lscapetrue
\DeclareKeys{%
  lscape .if    = @lscapeenhanced@lscape,
  lscape.usage  = general,
}
```

Processing the options:

```
\ExplSyntaxOff
\ProcessKeyOptions\relax
```

Now we can request the base package(s):

```
\expandafter\RequirePackage\expandafter{\@lscapeenhanced@req@packages}
```

As often as possible, we do not redefine macros of lscape, but patch them using xpatch:

```
\RequirePackage{xpatch}
```

\landscape

This command is the beginning of environment landscape. This has to be patched using xpatch.

```
\xpatchcmd{\landscape}{\textheight=\vsize}{%
  \if@lscapeenhanced@lscape
```

\@outputpage
\@lscapeenhanced@outputpage
lscapeenhanced@textheight (*ilen.*)

Here the changed value of `\textheight` is needed for initialization of `\@colht`. So we patch it to use the new internal `\@lscapeenhanced@textheight` instead of `\textheight`.

```
    \@lscapeenhanced@textheight=\vsize
    \let\@lscapeenhanced@outputpage\@outputpage
    \def\@outputpage{%
      \@lscapeenhanced@outputpage\global\@colht\@lscapeenhanced@textheight
    }%
  \else
    \textheight=\vsize
  \fi
}{%
  \PackageInfo{lscapeenhanced}{\string\landscape\space patched to make
    \string\textheight\space change optional}%
}{%
  \PackageWarning{lscapeenhanced}{Cannot patch \string\landscape!\MessageBreak
    Maybe you are using a unsupported lscape version}%
  \@lscapeenhanced@lscapefalse
}
\newlength{\@lscapeenhanced@textheight}
```

References

[Car20] David Carlisle. *The lscape package*. Version 3.02. May 8, 2020. URL: http://mirrors.ctan.org/macros/latex/required/graphics/lscape.pdf (visited on 07/19/2023).

[CT20] David Carlisle and The LaTeX Project Team. *lscape – Place selected parts of a document in landscape*. Version 3.02. Modifies the margins and rotates the page contents but not the page number. Useful, for example, with large multipage tables, as it is compatible with longtable and supertabular. May 28, 2020. URL: https://ctan.org/pkg/lscape (visited on 07/19/2023).

[Gre20] Enrico Gregorio. *xpatch – Extending etoolbox patching commands*. Version 0.3. The package generalises the macro patching commands provided by Philipp Lehmann's etoolbox. Mar. 25, 2020. URL: https://ctan.org/pkg/xpatch (visited on 07/19/2023).

[Koh23a] Markus Kohm. *KOMA-Script — A bundle of versatile classes and packages*. Version 3.41. The KOMA-Script bundle provides replacements for the article, report, and book classes with emphasis on typography and versatility. There is also a letter class. July 7, 2023. URL: https://ctan.org/pkg/koma-script (visited on 07/14/2023).

[Koh23b] Markus Kohm. *scrlfile – Installation control (not only) for KOMA-Script packages*. Version 3.41. The package provides hooks for the execution of commands before or after loading files, classes or packages independent from the LaTeX kernel version. July 7, 2023. URL: https://ctan.org/pkg/scrlfile (visited on 07/19/2023).

[Obe22] Heiko Oberdiek. *pdflscape – Make landscape pages display as landscape.* Version 0.13. The package adds PDF support to the `landscape` environment of package lscape, by setting the PDF `/Rotate` page attribute. Pages with this attribute will be displayed in landscape orientation by conforming PDF viewers. Oct. 28, 2022. URL: https://ctan.org/pkg/pdflscape (visited on 07/19/2023).

[TLT22] The LaTeX Project Team. "Issue 35." In: *LaTeX News* (June 2022). URL: http://mirrors.ctan.org/macros/latex/base/ltnews35.pdf (visited on 07/14/2023).

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Change History

v0.1 – 2023/06/01
General: start of KOMA-Script spin-off 1

v1.0 – 2024/04/16
General: first release as standalone package 1