

# The `lastpage` package\*

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## Abstract

This package puts the label `LastPage` (`\AtEndDocument`) into the `.aux` file, allowing the user to refer to the last page of a document. This might be particularly useful in places like headers or footers. –

When more than one page numbering scheme is used, or the `fnsymbol` page numbering scheme is used, or another package has output after this package, or the number of pages instead of the last page's name is needed, or the page numbers exceed a certain range, there might be problems, which can be solved by using the `pagesLTS` package instead.

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Save per page about 200 ml water, 2 g CO<sub>2</sub> and 2 g wood: Therefore please print only if this is really necessary.

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## 1 Introduction

This package puts the label `LastPage` (`\AtEndDocument`) into the `aux` file, allowing the user to refer to the last page of a document via `\pageref{LastPage}`. This might be particularly useful in places like headers or footers.

This package was invented by **Jeffrey P. Goldberg**, and is now maintained by H.-Martin Münch. A big “Thank you!” to Jeffrey P. Goldberg for granting this.

If you are more ambitious in respect to your aims with this package, you might want to have a look at the `pagesLTS` package (see section 4: Alternatives).

## 2 Usage

Just load the package placing

```
\usepackage{lastpage}
```

in the preamble of your  $\text{\LaTeX} 2_{\epsilon}$  source file.

For example for various draft forms it is desirable to have a page reference to the last page, so that e.g. page footers can contain something like “page  $N$  of  $K$ ”, where  $N$  is the current page and  $K$  is the last page. Once the package is loaded, anywhere in the text references can be made to the label `LastPage`. In particular one can use the `fancyhdr` or `nccfancyhdr` package, or redefinitions of the page headings and footings to get a reference to the last page.

In your document the code

```
\makeatletter
\renewcommand{\@evenfoot}{%
  {\normalsize\slshape DRAFT \today\hfil \upshape %
   page {\thepage} of \pageref{LastPage}}
\renewcommand{\@oddfoot}{\@evenfoot}
\makeatother
```

creates footers like

“*DRAFT February 1, 2011*      page 7 of 9”

in the compiled document (cf. the `lastpage-example` file).

If the `hyperref` package is used, the references are hyperlinked to their aims. If these hyperlinks shall be suppressed, `\pageref*{...}` instead of `\pageref{...}` can be used.

## 3 A lot of WARNINGS

(Short: try using the `pagesLTS` package instead, if you have room for some more `\counters`.)

### 3.1 `\AtEndDocument`

The output of a  $\text{\LaTeX} 2_{\epsilon}$  run is not independent of the order in which the packages are loaded. It is often the case that the same formats for which one must put tables and figure at the end, are the ones in which endnotes are also required. If one wants to use `\AtEndDocument` here as well (as done for `\pageref{LastPage}`), then it is easy to get to three separate uses of `\AtEndDocument` (assuming one uses this for the endnotes as well). Clearly it is not safe for any package writer or user to assume that no material will follow what they put into `\AtEndDocument`. Therefore a message, which begins with `AED`, is included in every usage of `\AtEndDocument`. –

(The `pagesLTS` package solves this problem by using `\AfterLastShipout` from Heiko Oberdiek’s `atveryend` package for the references `\lastpageref{VeryLastPage}` and `\lastpageref{LastPages}`.)

### 3.2 Interaction with very old versions of the `endfloat` package

The very old version 2.0 (and earlier) of the `endfloat` package actually redefined the `\enddocument` command, and so interfered drastically with the  $\text{\LaTeX} 2_{\epsilon}$  commands which make use of `\AtEndDocument`. Newer versions of `endfloat` exists (at the time of writing this documentation: v2.4i as of 1995/10/11) in modern documentation form, which should be available from the same source where you received this file, see subsection 7.1.

A note is placed in the style file. If you want your `LastPage` to label the last page of these end floats, you need to load `lastpage` after loading `endfloat` (or use `VeryLastPage` from the `pagesLTS` package instead). If, on the other hand, you

want `LastPage` to refer to the (not so) last page, exclusive of the the floats at the end, then load in the reverse order. Independent from the order of `lastpage` and `endfloat`, you will still need the modified<sup>1</sup> version of `endfloat`.

Other L<sup>A</sup>T<sub>E</sub>X209 (!) packages also seem to like to redefine `\enddocument`. In addition to the old `endfloat`, `harvard` comes to mind. All of these will need to be modified swiftly. **If possible, update to L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>!**

### 3.3 Page name instead of page number

When any page numbering scheme other than `arabic` is used at the page, which `\pageref{LastPage}` refers to, the *name* and not the *number* of the page is given. For example, `Alph` page numbering scheme and 10 pages will give `J` instead of 10, `Roman` page numbering scheme and 10 pages will give `X` instead of 10, and so on.

(The `pagesLTS` package puts `\lastpageref{LastPages}` (with `s` at the end) at your disposal for remediation.)

### 3.4 Wrong last page number with more than one page numbering scheme

When more than one page numbering scheme is used, `LastPage` does not give the total **number** of pages (even if `arabic` is the page numbering scheme of that page). For example, for a document with `VI+36` pages, it gives “36” as reference to the last page. While this is correct, the total number of pages is 42.

(The `pagesLTS` package puts `\lastpageref{LastPages}` (with `s` at the end) at your disposal for remediation.)

### 3.5 `\addtocounter{page}{...}` and `\setcounter{page}{...}`

When the page number was manipulated by `\addtocounter{page}{...}` or `\setcounter{page}{...}`, `LastPage` does not give the total **number** of pages (even if `arabic` is the page numbering scheme of that page).

(The `pagesLTS` package puts `\lastpageref{LastPages}` (with `s` at the end) at your disposal for remediation: `LastPages` ignores page number manipulation.)

### 3.6 Page number reset by `\pagenumbering{...}`

At a page numbering change the page number is reset to one. Therefore `LastPage` does not give the total **number** of pages (even if `arabic` is the page numbering scheme of that page). Furthermore, now two pages have the same name.

(The `pagesLTS` package does not only put `\lastpageref{LastPages}` (with `s` at the end) at your disposal for remediation: `LastPages` ignores page number manipulation. It furthermore offers the option `pagecontinue` to continue the page numbering, when `\pagenumbering{...}` is used.)

### 3.7 Last pages of different page numbering schemes

`\pageref{LastPage}` refers to the (maybe not so) last page of the last page numbering scheme. References to the respective last page of the other page numbering schemes are not provided.

(The `pagesLTS` package does this with labels `pagesLTS.<numbering scheme>`, where `<numbering scheme>` is e.g. `arabic`, `roman`, `Roman`, `alph`, or `Alph`. For `fnsymbol` please use `\lastpageref{pagesLTS.fnsymbol}` instead of `\pageref{pagesLTS.fnsymbol}`.)

### 3.8 Current page

The command `\thepage` gives the **name** of the current page in the current page numbering scheme, which is different from the current total/absolute page number e.g. with a second page numbering scheme, `\addtocounter{page}{...}`, or

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<sup>1</sup>The “new” version is nearly 15 years old, so it might be time to update to this version, if you did not do it already.

`\setcounter{page}{...}`, and it will not be an arabic number at all, if the current page numbering scheme is not arabic.

(The `pagesLTS` package provides the command `\theCurrentPage` and for the current number of pages in the current page numbering scheme `\theCurrentPageLocal`.)

### 3.9 First page

There is no special label at the first page.

(This is the `lastpage` package, after all.)

(The `pagesLTS` package creates a label `pagesLTS.0` at the first page of the document.)

### 3.10 Using the `fnsymbol` page numbering scheme

Using the `fnsymbol` page numbering scheme can result in problems – big ones!

When the page, where `\pageref{lastpage}` points at, is in `fnsymbol` page numbering scheme, this package will probably skrew up – and quite totally for that, especially when used together with the `hyperref` package (at least `hyperref` v6.80x as of 2010/04/17). Really! Sorry. So, you have been warned!

(The `pagesLTS` package with `\lastpageref{lastpage}` and appropriate package options should cope even with this case.)

### 3.11 Page counter overflow

“The ranges of supported counter values are more or less restricted. Only `\arabic` can be used with any counter value T<sub>E</sub>X supports.

Presentation command	Supported domain	Ignored values	Error message ‘Counter too large’
<code>\arabic</code>	<code>-MAX..MAX</code>		
<code>\roman</code> , <code>\Roman</code>	<code>1..MAX</code>	<code>-MAX..0</code>	
<code>\alph</code> , <code>\Alph</code>	<code>1..26</code>	<code>0</code>	<code>-MAX..-1</code> , <code>27..MAX</code>
<code>\fnsymbol</code>	<code>1..9</code>	<code>0</code>	<code>-MAX..-1</code> , <code>10..MAX</code>

`MAX = 2147483647`

” (Heiko Oberdiek: The `alphalph` package, 2010/04/18, v2.3, first table, p. 2).

When *any* page is out of that range, there will be a counter overflow.

(`lastpage` probably is not the right package to be asked to correct this anyway, but the `pagesLTS` package (with appropriate options) can do this.)

### 3.12 Other packages manipulating `\lastpage@putlabel`

The `hyperref` package redefines the `\lastpage@putlabel` command, and the `revtex4` class redefines the `\lastpage@putlabel` command, and the `hyperref` package redefines the `\lastpage@putlabel` command, if the `revtex4` class is used, and the `pagesLTS` “kills” the `\lastpage@putlabel` command, because that package uses more advanced labels.

In my humble opinion it would be preferably if one package (the original one, i. e. `lastpage`) would do the job right, all others packages would check for the version of that package, and if an old version is found, an error (or at least a warning) message about the use of an outdated package is given, and *then* as “last aid” the command of the outdated package is redefined.

Therefore here none of the definitions or commands of the other packages is altered, but `\lastpage@putlabel` was replaced by `\lastpage@putl@bel`. Because `\lastpage@putlabel` is no longer called, now there should not be any double definitions of the `lastpage` label.

## 4 Alternatives

There are similar packages, which do (or do not) similar things (or even more). As I neither know what exactly you want to accomplish when using this package (e. g. page number vs. page name, hyperlinks or not), nor what resources you have (e. g.  $\epsilon$ -TeX), here is a list of some possible alternatives:

lastpage209.sty

- If L<sup>A</sup>T<sub>E</sub>X 2.09 is still used, and if you are unable to switch to L<sup>A</sup>T<sub>E</sub>X 2 $\epsilon$ , the L<sup>A</sup>T<sub>E</sub>X 2.09 compatible lastpage209.sty can be used, which is defined as follows:

(It is also generated automatically from lastpage.dtx when compiling it.)

```
1  (*lastpage209)
2  % FOR LaTeX 2.09 ONLY - FOR LaTeX 2e USE lastpage.sty OR pagesLTS.sty!
3  % This is lastpage209.sty invented by Jeffrey P. Goldberg
4  % (jeffrey+news at goldmark dot org), maintained by
5  % H.-Martin M\{u}ench (Martin dot Muench at Uni-Bonn dot de).
6  \let\origenddocument=\enddocument%
7  \def\enddocument{\clearpage%
8  {\addtocounter{page}{-1}%
9  \immediate\write\@mainaux{\string\newlabel{LastPage}{\the page}}}%
10 \addtocounter{page}{+1}%
11 \origenddocument%
12 }%
13 \</lastpage209>
```

(after Piet van Oostrum: Page layout in L<sup>A</sup>T<sub>E</sub>X, March 2, 2004, section 16; fancyhdr.pdf). Because `\enddocument` is redefined, similar problems as with the old version of the `endfloat` package (see subsection 3.2) will arise.

**If possible, update to L<sup>A</sup>T<sub>E</sub>X 2 $\epsilon$**  (and maybe to the `pagesLTS` package)!

pagesLTS

- The `pagesLTS` package first started as a revision of the `lastpage` package, but it became obvious that a replacement was needed. For backward compatibility, a label named `LastPage` is provided. Thus `\usepackage{lastpage}` can be replaced by

```
\usepackage[pagecontinue=false,alphMult=0,AlphMulti=0,
fnsymbolmult=false,romanMult=false,RomanMulti=false]{pagesLTS},
```

if the behaviour of the `lastpage` package should be simulated. The default options are

```
\usepackage[pagecontinue=true,alphMult=ab,AlphMulti=AB,
fnsymbolmult=true,romanMult=true,RomanMulti=true]{pagesLTS}.
```

Using the `lastpage` before the `pagesLTS` before the `hyperref` [2010/06/18] v6.81g package results in multiply definitions of the `LastPage` label. While the `pagesLTS` package cancels the command `\lastpage@putlabel` from the `lastpage` package (because it does this itself, and better), `hyperref` redefines `\lastpage@putlabel` and thereby reintroduces it again (`hyperref` should probably check for the version of this `lastpage` package and/or whether the `pagesLTS` package was also loaded.)

Benefits of `pagesLTS` package (with appropriate options) are:

- + Labels `LastPage` (`\AtEndDocument`) and `VeryLastPage` (`\AfterLastShipout`), allowing the user to refer to the (very) last page of a document.
- + For example, when more than one page numbering scheme is used, the label `LastPages` gives the total *number* of pages.
- + At the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where `<numbering scheme>` is e. g. `arabic`, `roman`, `Roman`, `alph`, or `Alph`. For `fnsymbol` please use `\lastpageref{pagesLTS.fnsymbol}` instead of `\pageref{pagesLTS.fnsymbol}`.

- + When the same numbering scheme is used twice, the page numbers are either reset to one or continued automatically, depending on the option given when the package is called.
- + The command `\theCurrentPage` prints the current total/absolute page number – in contrast to `\thepage`, which gives only the page *name* in the current page numbering scheme. `\theCurrentPageLocal` gives the current number of pages in the current page numbering scheme. `\thepage` and `\theCurrentPageLocal` are different e.g. when `\addtocounter{page}{...}` or `\setcounter{page}{...}` were used.
- + At the first page of the document a label `pagesLTS.0` is created.
- + The `alphalph` package is supported, i.e. page numbers `alph` or `Alph`  $> 26$  and `fnyambol`  $> 9$  can be used (with according options set). Even zero and negative page numbers can be used with `arabic`, `alph`, `Alph`, `roman`, `Roman`, and `fnsymbol` page numbering (with `alphalph` package and according options).
- + It is checked whether a (very) old `endfloat` package is in use. If it is, a warning or even an error message is given, depending on `endfloat` version.
- + A rerun warning is given, when labels have changed.

Further labels are provided for special cases.

#### `totpages`

- The `totpages` package provides a `totpages` label similar to `LastPages \AtEndDocument` (instead of `\AfterLastShipout`, as done by `pagesLTS`). The `totpages` package additionally computes the number of paper sheets needed to (double) print the document (with one, two, three, . . . pages on one sheet of paper) (which can be achieved also with the `papermas` package, an extension of the `pagesLTS` package, which further allows to compute the mass of that printed version of the document, useful e.g. when sending it by mail to determine the postage).

#### `nofm.sty`

- “There is a package `nofm.sty` available, but some versions of it are defective, and most don’t work with `fancyhdr` because they take over the complete page layout.” (Piet van Oostrum: Page layout in  $\LaTeX$ , March 2, 2004, section 16; `fancyhdr.pdf`)  
`nofm` as of 1991/02/25 (without version number), available at <ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty>, does not work with e.g. `hyperref`, redefines `\enddocument` as well as `\@oddhead`, `\@evenhead`, `\@oddfloat`, and `\@evenfloat`.  
 If you know the (CTAN:) location of a **working** (!) version, please send me an e-mail, thanks!

#### `count1to`

- You may want to have a look at the `count1to` package.

#### `zref`

- The `zref` package of Heiko Oberdiek requires  $\varepsilon$ - $\TeX$ . `lastpage` does not require  $\varepsilon$ - $\TeX$ , but if you already have  $\varepsilon$ - $\TeX$ , you may have a look at the extensive `zref` package, whether it suits your needs better (or additionally or whatsoever).

(You programmed or found another alternative, which is available at CTAN: ? OK, send an e-mail to me with the name, location at CTAN:, and a short notice, and I will probably include it in the list above.)

About how to get those packages, please see subsection 7.1.

## 5 Example

```
14 (*example)
15 \documentclass[british]{article}
16 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
17 \usepackage[draft]{showkeys}[2007/08/07]% v3.15
18 %%      Use final instead of draft to hide the keys. %%
19 \usepackage[hyperref][2010/12/16]% v6.81z
20 \hypersetup{
21   extension=pdf,%
22   plainpages=false,%
23   pdfpagelabels=true,%
24   hyperindex=false,%
25   pdflang={en},%
26   pdftitle={lastpage package example},%
27   pdfauthor={Hans-Martin Muench},%
28   pdfsubject={Example for the lastpage package},%
29   pdfkeywords={LaTeX, lastpage, Hans-Martin Muench},%
30   pdfview=Fit,%
31   pdfstartview=Fit,%
32   pdfpagelayout=SinglePage%
33 }
34 %% If you disable hyperref, you must also remove the one \href in this example.
35 \usepackage[lastpage][2011/02/01]% v1.2g
36 \makeatletter
37 \renewcommand{\@evenfoot}{
38   {\normalsize\slshape \today\hfil \upshape page {\thepage} of \pageref{LastPage}}
39 \renewcommand{\@oddfoot}{\@evenfoot}
40 \gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
41 \makeatother
42 \listfiles
43 \begin{document}
44 \pagenumbering{Roman}
45
46 \section*{Example for lastpage}
47 \markboth{Example for lastpage}{Example for lastpage}
48
49 This example demonstrates the use of package\newline
50 \textsf{lastpage}, v1.2g as of 2011/02/01 (HMM; JPG).\newline
51 The package takes no options.\newline
52 For more details please see the documentation!\newline
53
54 \noindent \label{keys} To hide the \pageref{keys}{\quad } use option
55 \texttt{final} instead of \texttt{draft} with the \textsf{showkeys}
56 package (or remove the package call from the preamble of
57 this document).\newline
58
59
60 \textbf{Hyperlinks or not:} If the \textsf{hyperref} package is loaded,
61 the references are also hyperlinked:\newline
62 \smallskip
63 Last page's name (LastPage): \pageref{LastPage}\newline
64 \noindent If the \textsf{hyperref} package is loaded, but the hyperlinks
65 of the references shall be suppressed, \texttt{\textbackslash pageref*{\dots}}
66 can be used:\newline
67 \smallskip
68 Last page's name (LastPage): \pageref*{LastPage}\newline
69
70 \textbf{Trademarks} appear throughout this example without any
71 trademark symbol; they are the property of their respective
72 trademark owner. There is no intention of infringement; the
73 usage is to the benefit of the trademark owner.\newline
74
75 \textbf{Tip}: Use \textit{logical page numbers} for
76 the display of the pdf!\newline
77 (In Adobe Reader X (10.0.0): \underline{E}dit >>
78 Prefere\underline{n}ces (Ctrl+k) >> Page Display >>
79 Page Content and Information >> Use logical page
```



```

80 \nolinebreak{\underline{n}umbers.})\newline
81
82 If you are more ambitiouise in respect to your aims with this package,
83 you might want to have a look at the \textsf{pagesLTS} package\newline
84 (\href{http://www.ctan.org/tex-archive/macros/latex/contrib/pagesLTS/}{%
85 CTAN:/macros/latex/contrib/pagesLTS/}).
86
87 \bigskip
88
89 Save per page about $200\unit{ml}$~water, $2\unit{g}$~CO$_{2}$
90 and $2\unit{g}$~wood:\newline
91 Therefore please print only if this is really necessary.\newline
92 I do NOT think, that it is necessary to print THIS file, really\newline
93 (at least not after this page)!
94
95 \bigskip
96
97 \noindent The page (\texttt{\textbackslash thepage}): \thepage \newline
98
99 \noindent Last page's name (LastPage): \pageref{LastPage}
100
101 \newpage
102
103 \noindent The page (\texttt{\textbackslash thepage}): \thepage \newline
104
105 \noindent Last page's name (LastPage): \pageref{LastPage}
106
107 \newpage
108
109 \noindent The page (\texttt{\textbackslash thepage}): \thepage \newline
110
111 \noindent Last page's name (LastPage): \pageref{LastPage}
112
113 \newpage
114
115 \section*{The End}
116
117 \noindent The page (\texttt{\textbackslash thepage}): \thepage \newline
118
119 \noindent Last page's name (LastPage): \pageref{LastPage}
120 \end{document}
121 \end{example}

```

## 6 The implementation

We start off by checking that we are loading into L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> and announcing the name and version of this package.

```
122 (*package)
123 \NeedsTeXFormat{LaTeX2e}[1994/06/01]
124 \ProvidesPackage{lastpage}[2011/02/01 v1.2g
125           Refers to last page's name (HMM; JPG)]%
126
```

A short description of the lastpage package:

```
127 %% Allows for things like
128 %% Page \thepage of \pageref{LastPage}
129 %% to get
130 %% 'Page 7 of 9'.
```

A last information for the user(s):

```
131 %% For LaTeX 2.09 use lastpage209.sty. -
132 %% For LaTeX 2e maybe consider upgrading to the pagesLTS package.
133
```

The very old version 2.0 (and earlier) of the endfloat package actually redefined the `\enddocument` command, and so interfered drastically with the L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> commands which make use of `\AtEndDocument`. Newer versions of endfloat exists (at the time of writing this documentation: v2.4i as of 1995/10/11) in modern documentation form, which are available from [CTAN](#): (see subsection 7.1). A note is placed here. (The `pagesLTS` package even checks whether a (very) old endfloat package is in use. If it is, a warning or even an error message is given, depending on endfloat version.)

```
134 %% The recent version of the endfloat package is v2.4i as of 1995/10/11.
135 %% The lastpage package is not fully compatible with version 2.0
136 %% (and earlier) of the endfloat package, because those versions
137 %% redefined the \enddocument command.
138
```

There are no options to be introduced.

For comparisons, “one” is defined (`\@one` does not work for this).

```
139 \def\lastpage@one{1}
```

We define `\lastpage@hyper` and `\lastpage@LTS` to be “0”.

```
140 \gdef\lastpage@hyper{0}
141 \gdef\lastpage@LTS{0}
```

We define `\lastpage@firstpage` to be “1”.

```
142 \def\lastpage@firstpage{1}
```

```
\AtBeginDocument \AtBeginDocument it is checked whether the hyperref package is loaded.
(\@ifpackageloaded cannot be used later than \AtBeginDocument.)
If this is the case, \lastpage@hyper is defined as 1 (otherwise it stays 0).
```

```
143 \AtBeginDocument{
144   \@ifpackageloaded{hyperref}{\gdef\lastpage@hyper{1}}{ }%
145   \@ifpackageloaded{pagesLTS}{%
146     \PackageWarning{lastpage}{Package pagesLTS found.\MessageBreak%
147       Therefore the lastpage package is no longer necessary.\MessageBreak%
148     }%
149     \gdef\lastpage@LTS{1}%
150     \@ifpackagelater{pagesLTS}{2011/01/31}{% 2011/02/01 v1.1m
151       }%
152     \PackageWarning{lastpage}{Outdated version of pagesLTS package found.\MessageBreak%
153       For a recent version, see e.g. at \MessageBreak%
154       http://www.ctan.org/tex-archive/ \MessageBreak%
155       macros/latex/contrib/pagesLTS/ \MessageBreak%
156       or \MessageBreak%
157       http://www.ctan.org/tex-archive/ \MessageBreak%
158       install/macros/latex/contrib/pagesLTS.tds.zip \MessageBreak%
159     }!
```

```

160     }%
161   }%
162 }{%
163 \PackageInfo{lastpage}{Please have a look at the pagesLTS package at\MessageBreak%
164   http://www.ctan.org/tex-archive/ \MessageBreak%
165   macros/latex/contrib/pagesLTS/ \MessageBreak%
166   or\MessageBreak%
167   http://www.ctan.org/tex-archive/ \MessageBreak%
168   install/macros/latex/contrib/pagesLTS.tds.zip\MessageBreak%
169   !%
170 }%
171 }%

```

`\lastpage@putlabel`, used by older versions of this package, is redefined e. g. by `revtex` and `hyperref`. While now `\lastpage@putl@bel` is used instead, `revtex` or `hyperref` could also define a `lable LastPage`, which then would be multiply defined. (Which is no big issue, if it is associated with the same page.) Therefore we define

```
172 \gdef\lastpage@putlabel{\relax}
```

Because `\lastpage@putlabel` might be (re)defined later, depending on the order in which the packages are loaded, we will do this again `\AtEndDocument`.

```

173 }
174

```

`\lastpage@putl@bel` This command (in older package versions: definition) does the writing of the label:

```
175 \newcommand{\lastpage@putl@bel}{%
```

```

\AtBeginDocument it is checked whether the hyperref package is loaded,
\@ifpackageloaded{hyperref}{\gdef\lastpage@hyper{1}}{ }.
\@ifpackageloaded cannot be used later than \AtBeginDocument.
User Sebastian Bank found and reported (Thanks!) a case, when this check is not
sufficient. Using a class with
\usepackage{lastpage}
\AtBeginDocument{\usepackage{hyperref}}
leads to failed detection of the hyperref package, because \AtBeginDocument first
the check for hyperref is performed, and then hyperref is loaded. As mentioned
above, \@ifpackageloaded cannot be used later, so here we do not check for
the hyperref package again, but for its \Hy@Warning command. In version 1.2c
of the lastpage package, it was checked for the \hyperref command, but as it
turned out, tclatex is defining that. If some other package or user is defining
\Hy@Warning, lastpage will falsely assume, that hyperref has been loaded, but in
my humble opinion, defining \Hy@Warning does not make sense and is bad style
(except definition by the hyperref package itself, of course).

```

```

176 {\@ifundefined{Hy@Warning}{% hyperref not loaded
177   }{% hyperref loaded
178   \gdef\lastpage@hyper{1}%
179   }%

```

If the `pagesLTS` package is used, this `lastpage` package is not needed at all. The `LastPage` label would even be defined twice. Thus, if `pagesLTS` is used, here nothing is done:

```

180 \ifx\lastpage@LTS\lastpage@one%
181 \else%

```

Otherwise the label is set:

We have got to distinguish whether `hyperref` has been loaded or not:

```

182 \ifx\lastpage@hyper\lastpage@one%
183 \lastpage@putlabelhyper%
184 \else%

```

When `hyperref` has not been loaded, we just write the simple label into the `aux` file:

```

185 \begingroup
186 \addtocounter{page}{-1}%
187 \immediate\write\@auxout{\string\newlabel{LastPage}{{}{\thepage}}}%
188 \addtocounter{page}{+1}%

```

```

189     \endgroup
190     \fi%
191 \fi%
192 }

```

`\lastpage@putlabelhyper` When `hyperref` has been loaded, the label is set with the `\lastpage@putlabelhyper` command. If the `hyperref` package is used, but `pageanchors` are disabled, the hyperlinking will not work.

```

193 \newcommand{\lastpage@putlabelhyper}%
194 {
195   \ifHy@pageanchor
196     \PackageError{lastpage}{hyperref option pageanchor disabled}{%
197       The \string\pageref{LastPage} link doesn't work\MessageBreak%
198       using hyperref with disabled option 'pageanchor'.\MessageBreak%
199     }%
200 \fi%

```

Since the page has been put out, we are on the page *after* that page. We therefore subtract one from the page counter. (For the compiler, this is equal to `\advance\c@page\m@ne`, but for human readers it is probably easier to understand.)

```

201 \begingroup%
202   \addtocounter{page}{-1}%

```

Simply using `\label` for `LastPage` would not work, because labels wait for the output routines to work, and there may not be any more invocations of the output routines. To force the write out, we need to do an `\immediate` write into the aux file.

```

203 %% The following code is from the hyperref package           %%
204 %% [2010/04/17 v6.80x; newer versions are available]         %%
205 %% by Heiko Oberdiek (Big Thanks!).                          %%
206   \let\@number\@firstofone
207   \ifHy@pageanchor
208     \ifHy@hypertextnames
209       \ifHy@plainpages
210         \def\Hy@temp{\arabic{page}}%
211       \else
212         \Hy@unicodedefalse
213 %% Code not from hyperref package:                             %%
214 %% The following lines are taken from the pagesLTS package, %%
215 %% which in turn got them from the hyperref package and    %%
216 %% modified them.                                           %%
217 %% Without the modification, after the first shipout "PD1" %%
218 %% is inserted each time |\pdfstringdef\Hy@temp{\thepage}| %%
219 %% is executed.                                             %%
220     \ifnum \value{page}=1%

```

We do not count the pages ourselves, and so they could have been changes by e.g. `\pagenumbering{...}`, `\addtocounter{page}{...}`, `\setcounter{page}{...}`. Thus the page might have the number one while not being the first page at all. Using the `everyshi` package would help, but this package should not require other packages. `pagesLTS` package does a better handling, but requires some other packages.

We will make a mistake here at most once:

```

221     \ifx \lastpage@firstpage\lastpage@one
222       \def\Hy@temp{\thepage}%
223       \gdef\lastpage@firstpage{0}%
224     \else%
225 %% Code from hyperref package again:                           %%
226       \pdfstringdef\Hy@temp{\thepage}%
227 %% End of code from the hyperref package.                       %%
228     \fi%
229 %% The pagesLTS package would even check for fnsymbol page %%
230 %% numbering scheme and adapt the code correspondingly.      %%
231     \else%
232 %% Code from hyperref package again:                           %%
233       \pdfstringdef\Hy@temp{\thepage}%

```

```

234 %% Code from pagesLTS package again:                %%
235         \fi%
236 %% Code from hyperref package again:                %%
237         \fi
238         \else
239         \def\Hy@temp{\the\Hy@pagecounter}%
240         \fi
241     \fi
242     \immediate\write\@auxout{%
243         \string\newlabel
244         {LastPage}{{}\the\page}{}{%
245         \ifHy@pageanchor page.\Hy@temp\fi}{}%
246     }%
247 %% End of code from the hyperref package.            %%

```

After the writeout we restore the page number again, since there might be other things still to be done.

```

248     \addtocounter{page}{+1}%
249 \endgroup
250 }
251

```

`\AtEndDocument` `\AtEndDocument` we again (re)define `\lastpage@putlabel` to do nothing.

```

252 \AtEndDocument{%
253     \gdef\lastpage@putlabel{\relax}

```

It is checked whether writing to files is allowed (otherwise, only an error message is issued and nothing done).

```

254     \if@filesw%

```

We put in a `\message` to show, in what order things (which were called) are done (see subsection 3.1).

```

255     \message{AED: lastpage setting LastPage ^^J}%

```

After this we issue a `\clearpage` to put out all floats, which are still floatig, and place the `LastPage` label.

```

256     \clearpage\lastpage@putlabel%

```

When writing to files is not allowed, only an error message is issued and nothing is done.

```

257 \else%
258     \PackageError{lastpage}{No auxiliary file allowed.}%
259     {The lastpage package was not allowed to write to an .aux file.\MessageBreak%
260     This package does not work without access to an .aux file.\MessageBreak%
261     Press Ctrl+Z to exit.\MessageBreak%
262     }%
263 \fi%
264 }

```

```

265 </package>

```

## 7 Installation

**First, please make sure that there is no old version of lastpage at some obsolete place in your system!**

### 7.1 Downloads

Everything should be available on [CTAN:](http://www.ctan.org/tex-archive/), <http://www.ctan.org/tex-archive/>, but may need additional packages themselves.

`lastpage.dtx` For unpacking the `lastpage.dtx` file and constructing the documentation it is required:

- T<sub>E</sub>XFormat L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, 1994/06/01, v2<sub>ε</sub>: [CTAN:](#)
- document class `ltxdoc`, 2007/11/11, v2.0u,  
[CTAN:macros/latex/base/ltxdoc.dtx](#)
- package `holtxdoc`, 2010/04/24, v0.19,  
[CTAN:macros/latex/contrib/oberdiek/holtxdoc.dtx](#)
- package `hypdoc`, 2010/03/26, v1.9,  
[CTAN:macros/latex/contrib/oberdiek/hypdoc.dtx](#)

`lastpage.sty` The `lastpage.sty` for L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> (i. e. all documents using the `lastpage` package) requires:

- T<sub>E</sub>XFormat L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>, 1994/06/01, v2<sub>ε</sub>, [CTAN:](#)
- package `lastpage`, 2011/02/01, v1.2g,  
[CTAN:macros/latex/contrib/lastpage/lastpage.dtx](#)

and can use

- package `hyperref`, 2010/12/16, v6.81z,  
[CTAN:macros/latex/contrib/hyperref.zip](#)

`lastpage209.sty` The `lastpage209.sty` for L<sup>A</sup>T<sub>E</sub>X 209 (i. e. all documents using the `lastpage209` package) requires:

- T<sub>E</sub>XFormat L<sup>A</sup>T<sub>E</sub>X, v2.09
- package `lastpage209`, 2011/02/01, v1.2g, included in  
[CTAN:macros/latex/contrib/lastpage/lastpage.dtx](#)

and does not work with `hyperref`, which needs L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>.

`lastpage-example.tex` The `lastpage-example.tex` requires the same file as all documents using the `lastpage` package, i. e.

- package `lastpage`, 2011/02/01, v1.2g,  
[CTAN:macros/latex/contrib/pagesLTS/pagesLTS.dtx](#)  
(Well, it is the example file for this package, and because you are reading the documentation for the `lastpage` package, it can be assumed that you already have some version of it – is it the current one?)

and additionally:

- class `article`, 2007/10/19, v1.4h, from `classes.dtx`:  
[CTAN:macros/latex/base/classes.dtx](#)
- package `showkeys`, 2007/08/07, v3.15,  
[CTAN:macros/latex/required/tools/showkeys.dtx](#)
- package `hyperref`, 2010/12/16, v6.81z,  
[CTAN:macros/latex/contrib/hyperref.zip](#)

`endfloat` The `endfloat` package is not required, but because the `lastpage` package is incompatible with very old versions of the `endfloat` package (see subsection 3.2), here the recent one is listed:

- package `endfloat`, 1995/10/11, v2.4i,  
[CTAN:macros/latex/contrib/endfloat/endfloat.dtx](#)

`fancyhdr` Neither `fancyhdr` nor `nccfancyhdr` package is required (older versions of the `lastpage` package used its predecessor `fancyheadings`), but because they were mentioned, also they are listed here:

- package `fancyhdr`, 2005/03/22, v3.2,  
[CTAN:macros/latex/contrib/fancyhdr.zip](#)
- package `nccfancyhdr`, 2004/12/07, v1.1,  
[CTAN:macros/latex/contrib/ncctools/source/nccfancyhdr.dtx](#)

`count1to` As possible alternatives in section 4, Alternatives, there are listed

- `nofm`  
`totpages`  
`lastpage`  
`zref` - package `pagesLTS`, 2011/02/01, v1.1m,  
[CTAN:macros/latex/contrib/pagesLTS/pagesLTS.dtx](#)
- package `papermas`, 2011/02/01, v1.0e; the `papermas` package can be considered as kind of add-on to the `pagesLTS` package.  
[CTAN:macros/latex/contrib/papermas/papermas.dtx](#)
- package `count1to`, 2009/05/24, v2.1,  
[CTAN:macros/latex/contrib/ms/count1to.dtx](#)
- package `nofm`, 1991/02/25, v?.,  
<ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty> does not work with e. g. `hyperref`
- package `totpages`, 2005/09/19, v2.00,  
[CTAN:macros/latex/contrib/totpages/totpages.dtx](#)
- package `zref`, 2010/05/01, v2.17,  
[CTAN:macros/latex/contrib/oberdiek/zref.dtx](#)

`Oberdiek` All packages of Heiko Oberdiek's bundle 'oberdiek' (especially `holtxdoc` and `holtxdoc` `zref`) are also available in a TDS compliant ZIP archive:

`zref` [CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#).  
**Warning:** `holtxdoc`, 2010/04/24 v0.19, requires the packages

- `hypdoc`, 2010/03/26, v1.9
- `hyperref`, 2010/03/30, v6.80u (latest: 2010/12/16, v6.81z)
- `pdftexcmds`, 2010/04/01, v0.9
- `ltxcmds`, 2010/03/09, v1.4 (latest: 2010/04/26, v1.7)
- `holo`, 2010/04/24, v1.2
- `array` (latest: 2008/09/09, v2.4c)

(or more recent versions) and does neither work with nor check for earlier versions!  
(It is probably best to download

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

and use this, because the packages in there should be both recent and compatible.)

`Münch` A list of my packages can be found at <http://www.Uni-Bonn.de/~uzs5pv/LaTeX.html>.

## 7.2 Package, unpacking TDS

**Package.** This package is available on [CTAN](#):

[CTAN:macros/latex/contrib/lastpage/lastpage.dtx](#)  
The source file.

[CTAN:macros/latex/contrib/lastpage/lastpage.pdf](#)  
The documentation.

[CTAN:macros/latex/contrib/lastpage/lastpage-example.pdf](#)  
The compiled example file, as it should look like.

[CTAN:macros/latex/contrib/lastpage/README](#)  
The README file.

There is also a `lastpage.tds.zip` available:

[CTAN:install/macros/latex/contrib/lastpage.tds.zip](#)  
Everything in TDS compliant, compiled format.

which additionally contains

<code>lastpage.ins</code>	The installation file.
<code>lastpage.drv</code>	The driver to generate the documentation.
<code>ltxdoc.cfg</code>	The $\LaTeX$ documentation configuration file, also for generating the documentation.
<code>lastpage.sty</code>	The <code>.sty</code> file.
<code>lastpage209.sty</code>	The <code>.sty</code> file for $\LaTeX$ 209 <b>only</b> .
<code>lastpage-example.tex</code>	The example file.

For required other packages, see the preceding subsection.

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

```
tex lastpage.dtx
```

About generating the documentation see paragraph 7.4 below.

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree), **but first you should delete the old `lastpage` files (which are probably located in other directories)**. You can make a backup of the old files before deleting them, of course.

<code>lastpage.sty</code>	→ <code>tex/latex/lastpage.sty</code>
<code>lastpage.pdf</code>	→ <code>doc/latex/lastpage.pdf</code>
<code>lastpage-example.tex</code>	→ <code>doc/latex/lastpage-example.tex</code>
<code>lastpage-example.pdf</code>	→ <code>doc/latex/lastpage-example.pdf</code>
<code>lastpage.dtx</code>	→ <code>source/latex/lastpage.dtx</code>
<code>lastpage209.sty</code>	→ <code>tex/latex/lastpage209.sty</code> for $\LaTeX$ 209

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`.

## 7.3 Refresh file name databases

If your  $\TeX$  distribution (`te $\TeX$` , `mik $\TeX$` , ...) relies on file name databases, you must refresh these. For example, `te $\TeX$`  users run `texhash` or `mktextlsr`.



## 7.4 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{lastpage.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 the following 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 `pdf $\LaTeX$` :

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

## 7.5 Compiling the example

The example file, `lastpage-example.tex`, can be compiled via

```
latex lastpage-example.tex
```

or (recommended)

```
pdflatex lastpage-example.tex
```

and will need at least two compiler runs to get all references right.

## 8 Acknowledgements

I (H.-Martin Münch) would like to thank Jeffrey P. Goldberg (`jeffrey+news at goldmark dot org`) for inventing the `lastpage` package as well as for granting me to update it. Further I would like to thank Heiko Oberdiek (`heiko dot oberdiek at googlemail dot com`) for providing a lot (!) of useful packages (from which I also got everything I know about creating a file in `dtx` format, ok, say it: copying), and the `news:comp.text.tex` and `news:de.comp.text.tex` newsgroups for their help in all things  $\TeX$ . Thanks for bug reports go to Ulrike Fischer, Sebastian Bank, and James Hedges.

## 9 History

[1994/06/17 v0.99a]

- First shot by Jeffrey P. Goldberg.

[1994/06/25 v0.1b]

- Last version number created by Jeffrey P. Goldberg.

## [1994/07/20 v0.1b (again)]

- Documentation updated by Jeffrey P. Goldberg.  
The main source code of the `lastpage` package 1994/07/20 v0.1b was:

```
\NeedsTeXFormat{LaTeX2e}[1994/06/01]
\ProvidesPackage{lastpage}[1994/07/20 v0.1b
  LaTeX2e package for refs to last page number (JPG)]
\def\lastpage@putlabel{\addtocounter{page}{-1}%
  \immediate\write\@auxout{\string
  \newlabel{LastPage}{\thepage}}%
  \addtocounter{page}{1}}
\AtEndDocument{%
  \message{AED: lastpage setting LastPage}%
  \clearpage\lastpage@putlabel}%
\endinput
```

and then the `hyperref` package and the `revtex4` class even redefine `\lastpage@putlabel` (at least `hyperref` version 2010/09/13, v6.81n, and `REVTeX4` version 2010/07/25, v4.1r, still do this).

## [2010/02/18 v1.1]

- Proposed `LastPages` label by H.-Martin Münch on [news:comp.text.tex](mailto:news:comp.text.tex), see e.g. <http://groups.google.com/group/comp.text.tex/msg/4407493da9c747f0?dmode=source>; now available in the `pagesLTS` package.

## [2010/07/29 v1.2a]

- Complete rewriting of the package; upgrade from `fancyheadings` to `fancyhdr` package, then removed the need for a `fancyhdr` package at all.
- Included `lastpage209.sty` for  $\LaTeX_{209}$ .
- Replacement of `\filedate`, `-version`, `-name`,... because of  $\LaTeX$  bug 2705:  
Synopsis: Possible problem with `\fileversion` and `\filedate`  
<http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=anything&keyword=lastpage&pr=latex%2F2705&search=>
- Example `lastpage-example.tex`.
- Alternatives listing (section 4).
- Listing of  $\TeX$  sources (subsection 7.1).
- A lot (!) of details.
- Complete rewriting of the documentation.
- Added a list of my other packages.
- Everything in DTX framework.
- Included a `\Checksum`.
- Complete rewriting of the Readme file.

## [2010/08/12 v1.2b]

- Bug fix: `\@PackageInfoNoLine` is only available, if the `hyperref` package is loaded. (Bug reported by Ulrike Fischer, thanks!)
- Detected another bug: `\ifHy@pageanchor` etc. do not work without `hyperref`, and `\else` related to `\ifHy@pageanchor` was wrongly associated with a preceding `\if`, and everything went wrong. Now everything should work without `hyperref` again.

- Renamed `\lastpage@putlabel` to `\lastpage@putl@bel` to get rid of the conflicts with other classes and packages and resulting multiple definitions of `lastpage` label.

#### [2010/08/23 v1.2c]

- Bug fix: Additionally to checking for the `hyperref` package `\AtBeginDocument`, when placing the `lastpage` label it is also checked for the `\hyperref` command, in case `hyperref` was not loaded at `\begin{document}` yet. (Bug reported by Sebastian Bank, thanks!)
- Changed the `\unit` definition (got rid of an old `\rm`).
- Changed `\lastpage@puthyperlabel` to `\lastpage@putlabelhyper` analogous to `\pagesLTS@putlabelhyper` of the `pagesLTS` package.
- The recent version of the Adobe Reader ~~is~~ was 9.3.3 (instead of 9.3.1).
- Updated version number and date of `pagesLTS` package (especially for the check for outdated versions).
- Removed wrong `%` from the driver file.

#### [2010/08/25 v1.2d]

- Bug fix: also `tcilatex` defines the `\hyperref` command, therefore for `hyperref` package detection this had to be changed to `\Hy@Warning`.

#### [2010/09/12 v1.2e]

- James Hedges (Thanks!) pointed out, that there was no instruction in the documentation about suppressing hyperlinks: added (also to the example).
- The recent version of the Adobe Reader ~~is~~ was 9.3.4 (instead of 9.3.3).
- Diverse small changes.

#### [2010/09/24 v1.2f]

- Updated to version 2010/09/13 v6.81n of the `hyperref` package.
- New version of `REVTEX4` 2010/07/25, v4.1r, old problem.
- New version of `pagesLTS` package, 2010/09/22, v1.1k.
- Moved the package from `.../latex/muench/lastpage/...` to `.../latex/lastpage/...`  
(Please make sure that any old versions of the `lastpage` package are properly uninstalled from your system.)

#### [2011/02/01 v1.2g]

- Updated to version 2010/04/24 v0.19 of the `holtxdoc` package.
- New version of `pagesLTS` package, 2011/02/01, v1.1m.
- Replaced the list of my packages with a link to a web page list of those, which has the advantage of showing the recent versions of all those packages.
- Updated to version 2010/12/16 v6.81z of the `hyperref` package.
- The recent version of the Adobe Reader is X (10.0.0) (instead of 9.3.4). Its handling of special page numbers was improved.
- Minor details.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks! (Please see BUG REPORTS in the README.)

## 10 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.

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