

# Section name references in L<sup>A</sup>T<sub>E</sub>X<sup>\*</sup>

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## Documentation overview for hyperref

The documentation for package `hyperref` consists of several files:

**Manual** The user documentation is also available as HTML.

**README** Here information is collected that is not yet in the manual: new features, package compatibility, limitations, known problems, ...

**ChangeLog** This file records the version history.

**Options** This file provides a short option summary.

**Bookmark talk, slides** Slides for the talk “PDF information and navigation elements with hyperref, pdfTeX and thumbpdf” at EuroT<sub>E</sub>X 1999.

**Bookmark talk, paper** The paper version of the talk.

Source code documentation:

**hyperref.dtx** This is the source code documentation for hyperref (this file).

**backref.dtx** “Back referencing from bibliographical citations”

**nameref.dtx** “Section name references in L<sup>A</sup>T<sub>E</sub>X”

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<sup>\*</sup>This file has version number v2.28, last revised 2006/12/27.

# 1 Introduction

Cross-referencing to include the *name* of the section, rather than just the number or page. This works by redefining some of the inside  $\text{\LaTeX}$  macros, so it is vulnerable to future changes.

# 2 History

Sebastian Rahtz, for Lou Burnard, March 15th 1994;  
SPQR CERN July 1994;  
Last mod. Sept. 3th MG;  
Sept. 19th SPQR;  
April 11th 1995 SPQR (added section formatting hook);  
April 14th 1995 SPQR (compatibility with hyperref);  
June 22 1995 SPQR (removed typeout from Sectionformat);  
September 22 1997 added varioref hacks by Corey Minyard;  
September 28th changes by David Carlisle.  
More recent changes are recorded in ChangeLog.

# 3 Implementation

```
1 (*package)
2 \RequirePackage{refcount}[2006/02/12]
```

We redefine `\label` so that it also writes the name of the current section to the `.aux` file; if the name ends in a dot, we zap it. To allow for the `hyperref` package, also write fourth and fifth fields (empty by default; used for cross-ref name, and file).

```
3 \def\strip@period#1.\relax#2\@@@{#1}
```

## 3.1 `\label` stuff

Here is tested, whether package `showkeys` is loaded. But if option `final` is used, the macros of `showkeys` are not defined, so we have to check an additional test.

```
4 \newif\ifNR@showkeys
5 \NR@showkeysfalse
6 \@ifpackageloaded{showkeys}{%
7   \begingroup
8     \ifundefined{SK@@label}{%
9       }{%
10        \global\NR@showkeystrue
11      }%
12   \endgroup
13 }{}

14 \def\label#1{%
15   \@bsphack
16   \begingroup
17     \@onelevel@sanitize\@currentlabelname
18     \edef\@currentlabelname{%
19       \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
20     }%
21     \protected@write\@auxout{}{%
22       \string\newlabel{#1}{%
23         {\@currentlabel}%
```

```

24         {\thepage}%
25         {\@currentlabelname}%
26         {\@currentHref}{}%
27     }%
28 }%
29 \endgroup
30 \@esphack
31 }%
32 \ifNR@showkeys
33   \def\label#1{%
34     \@bsphack
35     \SK@SK@@label{#1}%
36     \begingroup
37       \@onelevel@sanitize\@currentlabelname
38       \edef\@currentlabelname{%
39         \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
40       }%
41       \protected@write\@auxout{}{%
42         \string\newlabel{#1}{%
43           {\@currentlabel}%
44           {\thepage}%
45           {\@currentlabelname}%
46           {\@currentHref}{}%
47         }%
48       }%
49     \endgroup
50     \@esphack
51   }%
52 \fi
53 \let\ltx@label\label

```

Needed for the *subeqnarray* package.

```

54 \@ifundefined{slabel}{}{%
55   \def\slabel#1{%
56     \@bsphack
57     \if@files
58       {%
59         \@onelevel@sanitize\@currentlabelname
60         \edef\@currentlabelname{%
61           \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
62         }%
63         \let\thepage\relax
64         \def\protect{\noexpand\noexpand\noexpand}%
65         \edef\@tempa{%
66           \write\@auxout{%
67             \string\newlabel{#1}{%
68               {\thesubequation}%
69               {\thepage}%
70               {\@currentlabelname}%
71               {\@currentHref}{}%
72             }%
73           }%
74         }%
75         \expandafter
76       }%
77       \@tempa
78     \if@nobreak\ifvmode\nobreak\fi\fi

```

```

79     \fi
80     \@esphack
81 }%
82 }

```

Overload an AMS L<sup>A</sup>T<sub>E</sub>X command, which uses `\newlabel`. Sigh!

```

83 \def\@writetocindent@{%
84   \begingroup
85   \@for\@tempa:=-1,0,1,2,3\do{%
86     \immediate\write\@auxout{%
87       \string\newlabel{tocindent\@tempa}{%
88         \csname r@tocindent\@tempa\endcsname}{-}{-}{-}%
89     }%
90   }%
91 }%
92 \endgroup}

```

### 3.2 Changes of section macros

Add to the underlying section heading macros so that they note the section name for use by label.

If a section heading or the like has a `\label` in it, we need to extract it, or subsequent processing breaks. This is done by the label-writing routine.

First the numbered sections. While we are about it, put in a useful section formatting macro.

```

93 \let\NR@ssect\@ssect
94 \newcounter{section@level}
95 \def\@ssect#1#2#3#4#5#6[#7]#8{%
96   \setcounter{section@level}{#2}%
97   \def\@currentlabelname{#7}%
98   \NR@ssect{#1}{#2}{#3}{#4}{#5}{#6}[#7]{\Sectionformat{#8}{#2}}%
99 }

```

and now the unnumbered ones

```

100 \let\NR@ssect\@ssect
101 \def\@ssect#1#2#3#4#5{%
102   \def\@currentlabelname{#5}%
103   \NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%
104 }

```

Parts and chapters are treated differently. sigh.

```

105 \let\NR@part\@part
106 \def\@part[#1]#2{%
107   \def\@currentlabelname{#1}%
108   \NR@part[#1]{#2}%
109 }
110 \let\NR@chapter\@chapter
111 \def\@chapter[#1]#2{%
112   \def\@currentlabelname{#1}%
113   \NR@chapter[#1]{#2}%
114 }
115 \let\NR@schapter\@schapter
116 \def\@schapter#1{%
117   \def\@currentlabelname{#1}%
118   \NR@schapter{#1}%
119 }

```

## Captions

```

120 \let\NR@@caption\@caption
121 \long\def\@caption#1[#2]{%
122   \def\@currentlabelname{#2}%
123   \NR@@caption{#1}[{#2}]%
124 }

Compatibility for package titlesec.

125 \AtBeginDocument{%
126   \@ifpackageloaded{titlesec}{%
127     \let\NRorg@ttl@sect@i\ttl@sect@i
128     \def\ttl@sect@i#1#2[#3]#4{%
129       \def\@currentlabelname{#4}%
130       \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
131     }%
132   }{}%
133 }
```

## 3.3 Referencing stuff

We default the label and hypertext reference to be empty.

```

134 \def\@currentlabelname{}
135 \def\@currentHref{}
```

Since the second part of the preserved reference now has five parts (number, page, name, hypertext reference and file), we need extra utility macros:

```

136 \long\def\@firstoffive#1#2#3#4#5{#1}
137 \long\def\@secondoffive#1#2#3#4#5{#2}
138 \long\def\@thirdoffive#1#2#3#4#5{#3}
139 \long\def\@fourthoffive#1#2#3#4#5{#4}
140 \long\def\@fifthoffive#1#2#3#4#5{#5}
```

We have to redefine `\ref` and `\pageref` to know about extra reference elements. Make them robust, and compatible with Babel. The Babel switch is mimicked if not already defined. Some support for package `showkeys` is implemented. If option `notref` of that package is set, `\SK@ref` has the meaning of `\@empty`.

```

141 \providecommand*\@safe@activestruer{}%
142 \providecommand*\@safe@activesfalse{}%
143 \def\NR@setref#1{%
144   \begingroup
145     \@safe@activestruer
146     \expandafter
147   \endgroup
148   \expandafter\NR@@setref\csname r@#1\endcsname
149 }
150 \def\NR@@setref#1{%
151   \ifx\@undefined#1%
152     \let#1\relax
153   \fi
154   \@setref#1%
155 }
156 \def\T@ref#1{%
157   \NR@setref{#1}\@firstoffive{#1}%
158 }%
159 \def\T@pageref#1{%
160   \NR@setref{#1}\@secondoffive{#1}%
161 }%
```

```

162 \ifNR@showkeys
163   \ifx\SK@ref\@empty
164   \else
165     \def\T@ref#1{%
166       \@safe@activetrue
167       \SK@\SK@@ref{#1}%
168       \@safe@activesfalse
169       \NR@setref{#1}\@firstoffive{#1}%
170     }%
171     \def\T@pageref#1{%
172       \@safe@activetrue
173       \SK@\SK@@ref{#1}%
174       \@safe@activesfalse
175       \NR@setref{#1}\@secondoffive{#1}%
176     }%
177   \fi
178 \fi

```

Package `hyperref` uses its own definitions of `\ref` and `\pageref` because it extends the syntax by the star form. `\DeclareRobustCommand` is used by `hyperref`. Package `nameref` can be loaded before, after `hyperref` or after `hyperref`'s definitions in `\AtBeginDocument`.

```

179 \@ifpackageloaded{hyperref}{%
180 }{%
181   \DeclareRobustCommand{\ref}{\T@ref}%
182   \DeclareRobustCommand{\pageref}{\T@pageref}%
183 }

```

### 3.4 Usage and frontend

Access the (third) name part with `\nameref`;

```

184 \def\T@nameref#1{%
185   \begingroup
186     \let\label\@gobble
187     \NR@setref{#1}\@thirdoffive{#1}%
188   \endgroup
189 }%
190 \ifNR@showkeys
191   \ifx\SK@ref\@empty
192   \else
193     \def\T@nameref#1{%
194       \@safe@activetrue
195       \SK@\SK@@ref{#1}%
196       \@safe@activesfalse
197       \begingroup
198         \let\label\@gobble
199         \NR@setref{#1}\@thirdoffive{#1}%
200       \endgroup
201     }%
202   \fi
203 \fi
204 \def\nameref{\protect\T@nameref}

```

An extended form which gives title and page number.

```

205 \def\Nameof#1{'\nameref{#1}' on page~\pageref{#1}}

```

The default for `\Sectionformat`

```

206 \providecommand\Sectionformat[2]{#1}

```

### 3.5 Package ifthen support

Package ifthen's `\isodd` does not work with `\pageref` because of the extra link and the star form. Therefore we need an expandable variant.

Unfortunately there is no hook in `\ifthenelse` in order to provide expandable versions without link of `\ref` and `\pageref`. As possible target I could only find `\begingroup`:

```
207 \@ifpackageloaded{ifthen}{%
208   \let\NROrg@ifthenelse\ifthenelse
209   \def\ifthenelse{%
210     \let\begingroup\NR@TE@begingroup
211     \NROrg@ifthenelse
212   }%
213   \let\NROrg@begingroup\begingroup
214   \def\NR@TE@begingroup{%
215     \let\begingroup\NROrg@begingroup
216     \begingroup
217     \def\ref##1{\getrefbykeydefault{##1}{-}{??}}%
218     \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
219   }%
220 }
```

### 3.6 Compatibility with varioref

[This section was derived by Corey Minyard [minyard@acm.org](mailto:minyard@acm.org) from the varioref package]

```
221 \ifx\csname @vpageref\endcsname\relax
222 \else
223   \def\@vpageref#1[#2]#3{%
224     \leavevmode\unskip
225     \global\advance\c@vrcnt\@ne
226     \@ifundefined{r@the\c@vrcnt @vr}%
227       {\@namedef{r@the\c@vrcnt @vr}{??}{??}{??}{??}}{}%
228     \edef\@tempa{%
229       \expandafter\expandafter\expandafter
230       \@secondoffive\csname r@the\c@vrcnt @vr\endcsname
231     }%
232     \@ifundefined{r@the\c@vrcnt @xvr}%
233       {\@namedef{r@the\c@vrcnt @xvr}{??}{??}{??}{??}}{}%
234     \edef\@tempb{%
235       \expandafter\expandafter\expandafter
236       \@secondoffive\csname r@the\c@vrcnt @xvr\endcsname
237     }%
238     {%
239       \let\@currentlabel\@empty
240       \expandafter\label\expandafter{\the\c@vrcnt @xvr}%
241     }%
242     \ifx\@tempa\@tempb
243     \else
244       \vref@err{%
245         \noexpand\vref at page boundary
246         \@tempb-\@tempa\space (may loop)%
247       }%
248     \fi
249     \@ifundefined{r@#3}{\@namedef{r@#3}{??}{??}{??}{??}}{}%
250     \edef\@tempb{%
251       \expandafter\expandafter\expandafter
```

```

252     \@secondoffive\csname r@#3\endcsname
253   }%
254   \space
255   \ifx\@tempa\@tempb
256     #1%
257   \else
258     #2%
259     \is@pos@number\@tempb{%
260       \is@pos@number\@tempa{%
261         \@tempcnta\@tempa
262         \advance\@tempcnta\@ne
263       }{%
264         \@tempcnta\maxdimen
265       }%
266       \ifnum \@tempb =\@tempcnta
267         \ifodd\@tempcnta
268           \if@twoside
269             \reftextfaceafter
270           \else
271             \reftextafter
272           \fi
273         \else
274           \reftextafter
275         \fi
276       \else
277         \advance\@tempcnta-2
278         \ifnum \@tempb =\@tempcnta
279           \ifodd\@tempcnta
280             \reftextbefore
281           \else
282             \if@twoside
283               \reftextfacebefore
284             \else
285               \reftextbefore
286             \fi
287           \fi
288         \else
289           \reftextfaraway{#3}%
290         \fi
291       \fi
292     }{%
293       \reftextfaraway{#3}%
294     }%
295   \fi
296   {%
297     \let\@currentlabel\@empty
298     \expandafter\label\expandafter{\the\c@vrcnt @vr}%
299   }%
300 }%
301 \DeclareRobustCommand\vnameref[1]{%
302   \unskip~\nameref{#1}%
303   \@vpageref[\unskip]{#1}%
304 }
305 \fi
306 \end{package}

```



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

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