

# 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 MANUAL** (also available as HTML).

**README** The **README** file (also available as text file). 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 (also available as text file).

**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 v2.31, last revised 2007/05/29.

## 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 L<sup>A</sup>T<sub>E</sub>X 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@filesw
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
93 }

```

## 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.

```

94 \let\NR@ssect\@ssect
95 \newcounter{section@level}
96 \def\@sect#1#2#3#4#5#6[#7]#8{%
97   \setcounter{section@level}{#2}%
98   \def\@currentlabelname{#7}%
99   \NR@ssect{#1}{#2}{#3}{#4}{#5}{#6}[#7]{\Sectionformat{#8}{#2}}%
100 }

```

and now the unnumbered ones

```

101 \let\NR@ssect\@ssect
102 \def\@ssect#1#2#3#4#5{%
103   \def\@currentlabelname{#5}%
104   \NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%
105 }

```

Parts and chapters are treated differently. sigh.

```

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

```

```

119 \NR@schapter{#1}%
120 }

Captions

121 \let\NR@@caption\@caption
122 \long\def\@caption#1[#2]{%
123   \def\@currentlabelname{#2}%
124   \NR@@caption{#1}[{#2}]%
125 }

126 \AtBeginDocument{%
127   \@ifpackageloaded{longtable}{%
128     \let\NRorg@LT@c@ption\LT@c@ption
129     \def\LT@c@ption#1[#2]#3{%
130       \NRorg@LT@c@ption{#1}[{#2}]{#3}%
131       \def\@tempa{#2}%
132       \ifx\@tempa\@empty
133         \else
134           \def\@currentlabelname{#2}%
135         \fi
136       }%
137     }{}%
138 }

Compatibility for package titlesec.

139 \AtBeginDocument{%
140   \@ifpackageloaded{titlesec}{%
141     \let\NRorg@ttl@sect@i\ttl@sect@i
142     \def\ttl@sect@i#1#2[#3]#4{%
143       \def\@currentlabelname{#4}%
144       \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
145     }%
146   }{}%
147 }

```

### 3.2.1 Class beamer

```

148 \@ifclassloaded{beamer}{%
149   \def\NR@PatchBeamer#1{%
150     \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname
151       \csname beamer@#1\endcsname
152     \begingroup
153       \edef\x{\endgroup
154         \long\def\expandafter\noexpand\csname beamer@#1\endcsname
155           [####1]{% hash-ok
156             \def\@currentlabelname{####1}%
157             \expandafter\@currentlabelname\csname NRorg@beamer@#1\endcsname
158             [{####1}]%
159           }%
160         }%
161       \x
162     }%
163   \NR@PatchBeamer{section}%
164   \NR@PatchBeamer{subsection}%
165   \NR@PatchBeamer{subsubsection}%
166 }{}

```

### 3.3 Referencing stuff

We default the label and hypertext reference to be empty.

```
167 \def\@currentlabelname{}
168 \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:

```
169 \long\def\@firstoffive#1#2#3#4#5{#1}
170 \long\def\@secondoffive#1#2#3#4#5{#2}
171 \long\def\@thirdoffive#1#2#3#4#5{#3}
172 \long\def\@fourthoffive#1#2#3#4#5{#4}
173 \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`.

```
174 \providecommand*\@safe@activetrue{}%
175 \providecommand*\@safe@activesfalse{}%
176 \def\NR@setref#1{%
177   \begingroup
178     \@safe@activetrue
179     \expandafter
180   \endgroup
181   \expandafter\NR@@setref\csname r@#1\endcsname
182 }
183 \def\NR@@setref#1{%
184   \ifx\@undefined#1%
185     \let#1\relax
186   \fi
187   \@setref#1%
188 }
189 \def\T@ref#1{%
190   \NR@setref{#1}\@firstoffive{#1}%
191 }%
192 \def\T@pageref#1{%
193   \NR@setref{#1}\@secondoffive{#1}%
194 }%
195 \ifNR@showkeys
196   \ifx\SK@ref\@empty
197     \else
198       \def\T@ref#1{%
199         \@safe@activetrue
200         \SK@\SK@@ref{#1}%
201         \@safe@activesfalse
202         \NR@setref{#1}\@firstoffive{#1}%
203       }%
204       \def\T@pageref#1{%
205         \@safe@activetrue
206         \SK@\SK@@ref{#1}%
207         \@safe@activesfalse
208         \NR@setref{#1}\@secondoffive{#1}%
209       }%
210     \fi
211   \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`.

```

212 \@ifpackageloaded{hyperref}{%
213 }{%
214   \DeclareRobustCommand{\ref}{\T@ref}%
215   \DeclareRobustCommand{\pageref}{\T@pageref}%
216 }

```

### 3.4 Usage and frontend

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

```

217 \def\T@nameref#1{%
218   \begingroup
219     \let\label\@gobble
220     \NR@setref{#1}\@thirdoffive{#1}%
221   \endgroup
222 }%
223 \ifNR@showkeys
224   \ifx\SK@ref\@empty
225   \else
226     \def\T@nameref#1{%
227       \@safe@activetrue
228       \SK@\SK@@ref{#1}%
229       \@safe@activesfalse
230       \begingroup
231         \let\label\@gobble
232         \NR@setref{#1}\@thirdoffive{#1}%
233       \endgroup
234     }%
235   \fi
236 \fi
237 \def\nameref{\protect\T@nameref}

```

An extended form which gives title and page number.

```

238 \def\Nameref#1{'\nameref{#1}' on page~\pageref{#1}}

```

The default for `\Sectionformat`

```

239 \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`:

```

240 \@ifpackageloaded{ifthen}{%
241   \let\NR@Org@ifthenelse\ifthenelse
242   \def\ifthenelse{%
243     \let\begingroup\NR@TE@begingroup
244     \NR@Org@ifthenelse
245   }%
246   \let\NR@Org@begingroup\begingroup
247   \def\NR@TE@begingroup{%
248     \let\begingroup\NR@Org@begingroup
249     \begingroup
250     \def\ref##1{\getrefbykeydefault{##1}{}{??}}%

```

```

251 \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
252 }%
253 {}

```

### 3.6 Compatibility with varioref

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

```

254 \AtBeginDocument{%
255   \ifx\csname @vppageref\endcsname\relax
256   \else
257     \def\@vppageref#1[#2]#3{%
258       \begingroup
259         \csname @safe@activetrue\endcsname
260         \edef\x{#3}%
261         \@onelevel@sanitize\x
262         \toks@{%
263           \NR@vppageref{#1}[{#2}]%
264         }%
265         \edef\x{\endgroup
266           \the\toks@{\x}%
267         }%
268       \x
269     }%
270     \def\NR@vppageref#1[#2]#3{%
271       \leavevmode\unskip
272       \global\advance\c@vrcnt\@ne
273       \@ifundefined{r@the\c@vrcnt @vr}%
274       {\@namedef{r@the\c@vrcnt @vr}{{??}{??}{-}{-}{-}}}%
275       \edef\@tempa{%
276         \expandafter\expandafter\expandafter
277         \@secondoffive\csname r@the\c@vrcnt @vr\endcsname
278       }%
279       \@ifundefined{r@the\c@vrcnt @xvr}%
280       {\@namedef{r@the\c@vrcnt @xvr}{{??}{??}{-}{-}{-}}}%
281       \edef\@tempb{%
282         \expandafter\expandafter\expandafter
283         \@secondoffive\csname r@the\c@vrcnt @xvr\endcsname
284       }%
285       {%
286         \let\@currentlabel\@empty
287         \expandafter\label\expandafter{\the\c@vrcnt @xvr}%
288       }%
289       \ifx\@tempa\@tempb
290       \else
291         \vref@err{%
292           \noexpand\vref at page boundary %
293           \@tempb-\@tempa\space (may loop)%
294         }%
295       \fi
296       \@ifundefined{r@#3}{\@namedef{r@#3}{{??}{??}{-}{-}{-}}}%
297       \edef\thevppagerefnum{%
298         \expandafter\expandafter\expandafter
299         \@secondoffive\csname r@#3\endcsname
300       }%
301       \ifx\vref@space\@undefined
302         \space

```



```

303 \else
304 \vref@space
305 \fi
306 \ifx\@tempa\thepagerefnum
307 #1%
308 \else
309 #2%
310 \is@pos@number\thepagerefnum{%
311 \is@pos@number\@tempa{%
312 \@tempcnta\@tempa
313 \advance\@tempcnta\@ne
314 }{%
315 \@tempcnta\maxdimen
316 }%
317 \ifnum \thepagerefnum =\@tempcnta
318 \ifodd\@tempcnta
319 \if@twoside
320 \reftextfaceafter
321 \else
322 \reftextafter
323 \fi
324 \else
325 \reftextafter
326 \fi
327 \else
328 \advance\@tempcnta-2 %
329 \ifnum \thepagerefnum =\@tempcnta
330 \ifodd\@tempcnta
331 \reftextbefore
332 \else
333 \if@twoside
334 \reftextfacebefore
335 \else
336 \reftextbefore
337 \fi
338 \fi
339 \else
340 \reftextfaraway{#3}%
341 \fi
342 \fi
343 }{%
344 \reftextfaraway{#3}%
345 }%
346 \fi
347 {%
348 \let\@currentlabel\@empty
349 \expandafter\label\expandafter{\the\c@vrcnt @vr}%
350 }%
351 }%
352 \DeclareRobustCommand\vnameref[1]{%
353 \unskip~\nameref{#1}%
354 \@vpageref[\unskip]{#1}%
355 }%
356 \fi
357 }

358 \ifundefined{@Refstar}{%
359 \def\T@Ref#1{%

```

```

360 \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
361 }%
362 \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
363 \MakeUppercase#1%
364 }%
365 }{}%
366 \AtBeginDocument{%
367 \ifpackageloaded{varioref}{%
368 \ifundefined{@Refstar}{%
369 \DeclareRobustCommand*\Ref}[1]{%
370 \T@Ref{#1}%
371 }%
372 }{}%
373 }{}%
374 }%

```

### 3.7 Support for listings

```

375 \AtBeginDocument{%
376 \ifpackageloaded{listings}{%
377 \let\NR@Org@lst@MakeCaption\lst@MakeCaption
378 \def\lst@MakeCaption{%
379 \ifx\lst@label\@empty
380 \else
381 \let\@currentlabelname\lst@@caption
382 \fi
383 \NR@Org@lst@MakeCaption
384 }%
385 }{}%
386 }
387 </package>

```

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