

# The latex-lab-toc-kernel-changes package

## Changes and additions to the kernel related to tagging and links in toc entries

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Version 0.85j 2026-04-27

### Abstract

The following module contains various changes to kernel commands and commands of the standard classes needed for the tagging of table of contents and similar lists.

## 1 Package declaration

```
1 <*kernelchange>
2 \ProvidesPackage{latex-lab-kernel-changes}
3     [\ltxlabkerneldate\space v\ltxlabkernelversion\space
4     General kernel and class changes]
```

## 2 Assigning the headings level numbers

The code for the toc must be able to compare the level of `subsection` against `section`. So some numbers are needed. It uses for now the commands used by `hyperref` for the bookmark levels. While headings are more a class thing, it could make sense to provide a standard set already in the kernel. The numbers are a bit different to the one in `hyperref`, but imho sensible.

[**TODO:** once that heading stuff is turned into template instances the template should set that number.]

```
5 \def\toclevel@document{-10}
6 \def\toclevel@part{-1}
7 \def\toclevel@chapter{0}
8 \def\toclevel@section{1}
9 \def\toclevel@subsection{2}
10 \def\toclevel@subsubsection{3}
11 \def\toclevel@paragraph{4}
12 \def\toclevel@subparagraph{5}
13 \def\toclevel@figure{1}
14 \def\toclevel@table{1}
```

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\*Initial implementation done by Ulrike Fischer

### 3 Storing relationship between target and structure

This is done in the kernel in a socket of `\MakeLinkTarget`

```
15 </kernelchange>
```

### 4 `\contentsline` extension

The tagging code must add code at the begin and end of `\contentsline`. This code must have access to the arguments. They are passed together in tagging socket which are declared in `ltagging`. The name of destination is forward through a command name to avoid problem with definitions of `\l@XX` which expect only two arguments.

```
16 <*package>
17 \def\contentsline#1#2#3#4%
18   {%
19     \UseTaggingSocket{toc/contentsline/before}{#1}{#2}{#3}{#4}%
20     \gdef\@contentsline@destination{#4}%
21     \csname l@#1\endcsname{#2}{#3}%
22     \UseTaggingSocket{toc/contentsline/after}{#1}{#2}{#3}{#4}%
23   }
```

### 5 `\addcontentsline` changes

`\addcontentsline` should always write the unique counter representation `\@currentHref` so that we can create the `/Ref` key. At the same time we need a hook, so that `hyperref` can add its bookmarks code, the generic hook with arguments is ok.

```
24 \def\addcontentsline#1#2#3{% #1=toc extension, #2= heading type, tag
25   \addtocontents{#1}{%
26     \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}\protected@file@percent
27   }}
```

### 6 `\@starttoc`

```
28 \def\@starttoc#1{%
29   \begingroup
30     \makeatletter
31     \UseTaggingSocket{toc/starttoc/before}{#1}%
32     \@input{\jobname.#1}%
33     \UseTaggingSocket{toc/starttoc/after}{#1}%
34     \if@filesn
35       \expandafter\newwrite\csname tf@#1\endcsname
36       \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
37     \fi
38     \@nobreakfalse
39   \endgroup}
```

## 7 Formatting of the toc entries

### 7.1 Kernel commands

We need hooks before and after the content and before and after the page number. The number needs some thing so that it can be tagged as label. The text and the page hooks are used in manual `\l@xx` commands and in `\l@xx` defined by `\@dottedtocline` or by other means. The arguments of the following hooks are:

#1 level as a *number* (integer expression), see above for the standard numbering. The standard first argument of `\contentsline` is not used, as `\@dottedtocline` knows only a number.

#2 content (the second argument of a `\contentsline`)

#3 page (the third argument of a `\contentsline`)

#4 target (the fourth argument of a `\contentsline`)

```
40 \NewMirroredHookPairWithArguments{contentsline/number/before}{contentsline/number/after}{1}%
41 \NewMirroredHookPairWithArguments{contentsline/text/before}{contentsline/text/after}{4}%
42 \NewMirroredHookPairWithArguments{contentsline/page/before}{contentsline/page/after}{4}%
```

The dots in the leader must be set as artifact. But luatex requires that the mc are set outside the leaders. So we need sockets.

`\@dottedtocline` needs hooks and formatting commands. To make the leaders into artifact we use tagging sockets.

The destination is accessed through `\@contentsline@destination`.

```
43 \def\@dottedtocline#1#2#3#4#5{%
44   \ifnum #1>\c@tocdepth \else
45     \vskip \z@ \@plus.2\p@
46     {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
47      \parindent #2\relax\@afterindenttrue
48      \interlinepenalty\@M
49      \leavevmode
50      \@tempdima #3\relax
51      \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
52      \UseHookWithArguments{contentsline/text/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
53      \csname contentsline@text@#1\format\endcsname{#4}%
54      \UseHookWithArguments{contentsline/text/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
55      \nobreak
56      \UseTaggingSocket{toc/leaders/before}\SuspendTagging{toc/leaders}%
57      \leaders\hbox{$\m@th
58        \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
59        mu$}\hfill
60      \ResumeTagging{toc/leaders}\UseTaggingSocket{toc/leaders/after}%
61      \nobreak
62      \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor
63      \UseHookWithArguments{contentsline/page/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
64      #5%
65      \UseHookWithArguments{contentsline/page/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
66      \kern-\p@\kern\p@}%
67   \par}%
68 \fi}
```

## 7.2 \numberline

Inside or outside the box?

```

69 \def\numberline#1{\hb@xt@{\tempdima{%
70   \UseHookWithArguments{contentsline/number/before}{1}{#1}%
71   #1\hfil
72   \UseHookWithArguments{contentsline/number/after}{1}{#1}%
73 }}

```

## 7.3 \l@xx in the classes

Depending on the class we have to redefine also more commands For other classes it should be documented what is needed.

```

74 \AddToHook{class/article/after}
75 {
76   \renewcommand*\l@part[2]{% as in contentsline: content, page
77   \ifnum \c@tocdepth >-2\relax
78     \addpenalty\@secpenalty
79     \addvspace{2.25em \@plus\p@}%
80     \setlength\@tempdima{3em}%
81     \begingroup
82       \parindent \z@ \rightskip \@pnumwidth
83       \parfillskip -\@pnumwidth
84       {\leavevmode
85         \large \bfseries
86         \UseHookWithArguments{contentsline/text/before}{4}
87         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
88         \csname contentsline@text@-1@format\endcsname{#1}%
89         \UseHookWithArguments{contentsline/text/after}{4}
90         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
91         \hfil
92         \hb@xt@\@pnumwidth{\hss
93         \UseHookWithArguments{contentsline/page/before}{4}
94         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
95         #2%
96         \UseHookWithArguments{contentsline/page/after}{4}
97         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
98         \kern-\p@\kern\p@}}\par
99       \nobreak
100     \endgroup
101   \fi}
102 \renewcommand*\l@section[2]{%
103   \ifnum \c@tocdepth >\z@
104     \addpenalty\@secpenalty
105     \addvspace{1.0em \@plus\p@}%
106     \setlength\@tempdima{1.5em}%
107     \begingroup
108       \parindent \z@ \rightskip \@pnumwidth
109       \parfillskip -\@pnumwidth
110       \leavevmode \bfseries
111       \advance\leftskip\@tempdima
112       \hskip -\leftskip
113       \UseHookWithArguments{contentsline/text/before}{4}

```

```

114     {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
115     \csname contentsline@text@1@format\endcsname{#1}%
116     \UseHookWithArguments{contentsline/text/after}{4}
117     {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
118     \nobreak\hfil
119     \nobreak\hb@xt@{\@pnumwidth}{\hss
120     \UseHookWithArguments{contentsline/page/before}{4}
121     {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
122     #2%
123     \UseHookWithArguments{contentsline/page/after}{4}
124     {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
125     \kern-\p@\kern\p@}\par
126   \endgroup
127 \fi}
128 }
129 \AddToHook{class/report/after}
130 {
131   \renewcommand*\l@part[2]{%
132     \ifnum \c@tocdepth >-2\relax
133       \addpenalty{-\@highpenalty}%
134       \addvspace{2.25em \@plus\p@}%
135       \setlength\@tempdima{3em}%
136       \begingroup
137         \parindent \z@ \rightskip \@pnumwidth
138         \parfillskip -\@pnumwidth
139         {\leavevmode
140           \large \bfseries
141           \UseHookWithArguments{contentsline/text/before}{4}
142           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
143           \csname contentsline@text@-1@format\endcsname{#1}%
144           \UseHookWithArguments{contentsline/text/after}{4}
145           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
146           \hfil
147           \hb@xt@{\@pnumwidth}{\hss
148           \UseHookWithArguments{contentsline/page/before}{4}
149           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
150           #2%
151           \UseHookWithArguments{contentsline/page/after}{4}
152           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
153           \kern-\p@\kern\p@}}\par
154         \nobreak
155       \endgroup
156     \fi}
157   \renewcommand*\l@chapter[2]{%
158     \ifnum \c@tocdepth >\m@ne
159       \addpenalty{-\@highpenalty}%
160       \vskip 1.0em \@plus\p@
161       \setlength\@tempdima{1.5em}%
162       \begingroup
163         \parindent \z@ \rightskip \@pnumwidth
164         \parfillskip -\@pnumwidth
165         \leavevmode \bfseries
166         \advance\leftskip\@tempdima
167         \hskip -\leftskip

```

```

168      \UseHookWithArguments{contentsline/text/before}{4}
169      {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
170      \csname contentsline@text@0@format\endcsname
171      {#1}%
172      \UseHookWithArguments{contentsline/text/after}{4}
173      {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
174      \nobreak\hfil
175      \nobreak\hb@xt@{\@pnumwidth}{\hss
176      \UseHookWithArguments{contentsline/page/before}{4}
177      {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}}%
178      #2%
179      \UseHookWithArguments{contentsline/page/after}{4}
180      {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}}%
181      \kern-\p@\kern\p@}\par
182      \penalty\@highpenalty
183    \endgroup
184  \fi}
185 }
186 \AddToHook{class/book/after}
187 {
188   \renewcommand*\l@part[2]{%
189     \ifnum \c@tocdepth >-2\relax
190       \addpenalty{-\@highpenalty}%
191       \addvspace{2.25em \@plus\p@}%
192       \setlength\@tempdima{3em}%
193       \begingroup
194         \parindent \z@ \rightskip \@pnumwidth
195         \parfillskip -\@pnumwidth
196         {\leavevmode
197           \large \bfseries
198           \UseHookWithArguments{contentsline/text/before}{4}
199           {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
200           \csname contentsline@text@-1@format\endcsname{#1}%
201           \UseHookWithArguments{contentsline/text/after}{4}
202           {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
203           \hfil
204           \hb@xt@{\@pnumwidth}{\hss
205           \UseHookWithArguments{contentsline/page/before}{4}
206           {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
207           #2%
208           \UseHookWithArguments{contentsline/page/after}{4}
209           {\toclevel@part}{#1}{#2}{\@contentsline@destination}}%
210           \kern-\p@\kern\p@}\par
211         \nobreak
212       \endgroup
213     \fi}
214   \renewcommand*\l@chapter[2]{%
215     \ifnum \c@tocdepth >\m@ne
216       \addpenalty{-\@highpenalty}%
217       \vskip 1.0em \@plus\p@
218       \setlength\@tempdima{1.5em}%
219       \begingroup
220         \parindent \z@ \rightskip \@pnumwidth
221         \parfillskip -\@pnumwidth

```

```

222     \leavevmode \bfseries
223     \advance\leftskip\@tempdima
224     \hskip -\leftskip
225     \UseHookWithArguments{contentsline/text/before}{4}
226     {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
227     \csname contentsline@text@0@format\endcsname
228     {#1}%
229     \UseHookWithArguments{contentsline/text/after}{4}
230     {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
231     \nobreak\hfil
232     \nobreak\hb@xt@\@pnumwidth{\hss
233     \UseHookWithArguments{contentsline/page/before}{4}
234     {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
235     #2%
236     \UseHookWithArguments{contentsline/page/after}{4}
237     {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
238     \kern-\p@\kern\p@}\par
239     \penalty\@highpenalty
240     \endgroup
241     \fi}
242 }
243 </package>

```