

# 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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**Abstract**

## 1 Introduction

The followings contains various changes to kernel commands needed for the tagging of table of contents and similar lists.

## 2 General kernel and class changes

Some of the changes can probably could go into the kernel. This are marked with `[kernel?]`, the other are marked with `[latex-lab]`. A few changes must be done in the classes. They are marked as `[class]`. They are inserted with hooks here: this will break if a non-standard class is used.

### 2.1 Package declaration

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

### 2.2 Providing the counter representation `\theHxx` generally

This has been moved to base.

We still suppress the patches from `hyperref`:

```
5 \def\hyper@nopatch@counter{}
```

---

\*Initial implementation done by Ulrike Fischer

## 2.3 Assigning the headings level numbers

[kernel?]

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.

Note for the future: once that heading stuff is turned into template instances the template should set that number.

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

## 2.4 Storing relationship between target and structure

Most of this is now in the kernel, but the definition of `\MakeLinkTarget` in `hyperref` misses the socket. Until it is there, we add it through a hook:

```
16 \ExplSyntaxOn
17 \AddToHook{package/hyperref/after}
18 {
19   \RenewDocumentCommand\MakeLinkTarget {s O{} m}
20   {
21     \bool_if:NT \l__hyp_target_create_bool
22     {
23       \group_begin:
24       \hook_use:n { makelinktarget }
25       \IfBooleanTF {#1}
26       {
27         \__hyp_target_manual:nn {#2}{#3}
28       }
29       {
30         \__hyp_target_counter:nn {#2}{#3}
31       }
32       \group_end:
33       \UseTaggingSocket{recordtarget}
34     }
35   }
36 }
37 \ExplSyntaxOff
38 </kernelchange>
```

## 2.5 load kernel changes

```
39 <*package>
40 \RequirePackage{latex-lab-kernel-changes}
```

## 2.6 \contentsline extension

[latex-lab] 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.

`toc/contentsline/before (socket)` Tagging sockets at the begin and end of `contentsline`. They receive *all* `contentsline` arguments as one argument in four brace groups. The socket code should then use the parts it needs. The sockets will be in `ltagging.dtx`, but that may only happen in the next main release, so for now we test if they are in the format and if not define them now.

```
41 \socket_if_exist:nF {tagsupport/toc/contentsline/before}
42   {
43     \NewTaggingSocket{toc/contentsline/before}{1}
44     \NewTaggingSocket{toc/contentsline/after}{1}
45   }
```

for the hooks we need that the `\l@XX` pass also the destination and that `\l@XX` takes three arguments. TODO: test that, if there are two many problems we should pass the destination through a command name ...

```
46 \def\contentsline#1#2#3#4%
47   {%
48     \UseTaggingSocket{toc/contentsline/before}{#1}{#2}{#3}{#4}%
49     \gdef\@contentsline@destination{#4}%
50     \csname l@#1\endcsname{#2}{#3}%
51     \UseTaggingSocket{toc/contentsline/after}{#1}{#2}{#3}{#4}%
52   }
```

## 2.7 \addcontentsline changes

[latex-lab]

`\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.

```
53 \def\addcontentsline#1#2#3{% #1=toc extension, #2= heading type, tag
54   \addtocontents{#1}{%
55     \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}\protected@file@percent
56   }}
```

## 2.8 \@starttoc

[kernel?]

We add a tagging socket before and after reading the file for the tagging.

`port/toc/starttoc/before (socket)` Tagging sockets for the begin and end of start of `\@starttoc`. They take one argument, the extension. The sockets will be in `ltagging.dtx`, but that may only happen in the next main release, so for now we test if they are in the format and if not define them now.

```

57 \socket_if_exist:nF {tagsupport/toc/starttoc/before}
58   {
59     \NewTaggingSocket{toc/starttoc/before}{1}
60     \NewTaggingSocket{toc/starttoc/after}{1}
61   }

62 \def\@starttoc#1{%
63   \begingroup
64     \makeatletter
65     \UseTaggingSocket{toc/starttoc/before}{#1}%
66     \@input{\jobname.#1}%
67     \UseTaggingSocket{toc/starttoc/after}{#1}%
68     \if@filesw
69       \expandafter\newwrite\csname tf@#1\endcsname
70       \immediate\openout \csname tf@#1\endcsname \jobname.#1\relax
71     \fi
72     \@nobreakfalse
73   \endgroup}

```

## 2.9 Formatting of the toc entries

### 2.9.1 Kernel commands

[latex-lab] or [kernel?]?

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`)

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

```

74 \NewMirroredHookPairWithArguments{contentsline/number/before}{contentsline/number/after}{1}%
75 \NewMirroredHookPairWithArguments{contentsline/text/before}{contentsline/text/after}{4}%
76 \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 declaration should perhaps be moved into `ltagging` so that it can be used also by external packages even if the tagging code is not loaded?

`port/toc/leaders/before` (*socket*) Tagging sockets to make the dot leaders an artifact. They do not take an argument.

`port/toc/leaders/after` (*socket*) The sockets will be in `ltagging.dtx`, but that may only happen in the next main release, so for now we test if they are in the format and if not define them now.

```

77 \socket_if_exist:nF {tagsupport/toc/leaders/before}
78   {
79     \NewTaggingSocket{toc/leaders/before}{0}
80     \NewTaggingSocket{toc/leaders/after}{0}
81   }

```

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

```

82 \def\@dottedtocline#1#2#3#4#5{%
83   \ifnum #1>\c@tocdepth \else
84     \vskip \z@ \@plus.2\p@
85     {\leftskip #2\relax \rightskip \@tocrmarg \parfillskip -\rightskip
86     \parindent #2\relax\@afterindenttrue
87     \interlinepenalty\@M
88     \leavevmode
89     \@tempdima #3\relax
90     \advance\leftskip \@tempdima \null\nobreak\hskip -\leftskip
91     \UseHookWithArguments{contentsline/text/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
92     \csname contentsline@text@#1@format@endcsname{#4}%
93     \UseHookWithArguments{contentsline/text/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
94     \nobreak
95     \UseTaggingSocket{toc/leaders/before}\SuspendTagging{toc/leaders}%
96     \leaders\hbox{$\m@th
97       \mkern \@dotsep mu\hbox{.}\mkern \@dotsep
98       mu$}\hfill
99     \ResumeTagging{toc/leaders}\UseTaggingSocket{toc/leaders/after}%
100    \nobreak
101    \hb@xt@\@pnumwidth{\hfil\normalfont \normalcolor
102    \UseHookWithArguments{contentsline/page/before}{4}{#1}{#4}{#5}{\@contentsline@destination}%
103    #5%
104    \UseHookWithArguments{contentsline/page/after}{4}{#1}{#4}{#5}{\@contentsline@destination}%
105    \kern-\p@\kern\p@}%
106    \par}%
107 \fi}

```

## 2.9.2 \numberline

[kernel?] Inside or outside the box?

```

108 \def\numberline#1{\hb@xt@\@tempdima{%
109   \UseHookWithArguments{contentsline/number/before}{1}{#1}%
110   #1\hfil
111   \UseHookWithArguments{contentsline/number/after}{1}{#1}%
112   }}

```

## 2.9.3 \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. Let the commands grab also the third arguments. If a class redefines them again it will break tagging anyway.

```

113 \AddToHook{class/article/after}
114 {
115   \renewcommand*\l@part[2]{% as in contentsline: content, page
116   \ifnum \c@tocdepth >-2\relax

```

```

117 \addpenalty\@secpenalty
118 \addvspace{2.25em \@plus\p@}%
119 \setlength\@tempdima{3em}%
120 \begingroup
121 \parindent \z@ \rightskip \@pnumwidth
122 \parfillskip -\@pnumwidth
123 {\leavevmode
124 \large \bfseries
125 \UseHookWithArguments{contentsline/text/before}{4}
126 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
127 \csname contentsline@text@-1@format\endcsname{#1}%
128 \UseHookWithArguments{contentsline/text/after}{4}
129 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
130 \hfil
131 \hb@xt@\@pnumwidth{\hss
132 \UseHookWithArguments{contentsline/page/before}{4}
133 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
134 #2%
135 \UseHookWithArguments{contentsline/page/after}{4}
136 {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
137 \kern-\p@\kern\p@}}\par
138 \nobreak
139 \endgroup
140 \fi}
141 \renewcommand*\l@section[2]{%
142 \ifnum \c@tocdepth >\z@
143 \addpenalty\@secpenalty
144 \addvspace{1.0em \@plus\p@}%
145 \setlength\@tempdima{1.5em}%
146 \begingroup
147 \parindent \z@ \rightskip \@pnumwidth
148 \parfillskip -\@pnumwidth
149 \leavevmode \bfseries
150 \advance\leftskip\@tempdima
151 \hskip -\leftskip
152 \UseHookWithArguments{contentsline/text/before}{4}
153 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
154 \csname contentsline@text@1@format\endcsname{#1}%
155 \UseHookWithArguments{contentsline/text/after}{4}
156 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
157 \nobreak\hfil
158 \nobreak\hb@xt@\@pnumwidth{\hss
159 \UseHookWithArguments{contentsline/page/before}{4}
160 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
161 #2%
162 \UseHookWithArguments{contentsline/page/after}{4}
163 {\toclevel@section}{#1}{#2}{\@contentsline@destination}%
164 \kern-\p@\kern\p@}\par
165 \endgroup
166 \fi}
167 }
168 \AddToHook{class/report/after}
169 {
170 \renewcommand*\l@part[2]{%

```

```

171 \ifnum \c@tocdepth >-2\relax
172   \addpenalty{-\@highpenalty}%
173   \addvspace{2.25em \@plus\p@}%
174   \setlength\@tempdima{3em}%
175   \begingroup
176     \parindent \z@ \rightskip \@pnumwidth
177     \parfillskip -\@pnumwidth
178     {\leavevmode
179       \large \bfseries
180       \UseHookWithArguments{contentsline/text/before}{4}
181         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
182       \csname contentsline@text@-1@format\endcsname{#1}%
183       \UseHookWithArguments{contentsline/text/after}{4}
184         {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
185       \hfil
186       \hb@xt@\@pnumwidth{\hss
187         \UseHookWithArguments{contentsline/page/before}{4}
188           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
189         #2%
190         \UseHookWithArguments{contentsline/page/after}{4}
191           {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
192         \kern-\p@\kern\p@}}\par
193     \nobreak
194   \endgroup
195 \fi}
196 \renewcommand*\l@chapter[2]{%
197 \ifnum \c@tocdepth >\m@ne
198   \addpenalty{-\@highpenalty}%
199   \vskip 1.0em \@plus\p@
200   \setlength\@tempdima{1.5em}%
201   \begingroup
202     \parindent \z@ \rightskip \@pnumwidth
203     \parfillskip -\@pnumwidth
204     \leavevmode \bfseries
205     \advance\leftskip\@tempdima
206     \hskip -\leftskip
207     \UseHookWithArguments{contentsline/text/before}{4}
208       {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
209     \csname contentsline@text@0@format\endcsname
210       {#1}%
211     \UseHookWithArguments{contentsline/text/after}{4}
212       {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
213     \nobreak\hfil
214     \nobreak\hb@xt@\@pnumwidth{\hss
215       \UseHookWithArguments{contentsline/page/before}{4}
216         {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
217       #2%
218       \UseHookWithArguments{contentsline/page/after}{4}
219         {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
220       \kern-\p@\kern\p@}\par
221     \penalty\@highpenalty
222   \endgroup
223 \fi}
224 }

```

```

225 \AddToHook{class/book/after}
226 {
227   \renewcommand*\l@part[2]{%
228     \ifnum \c@tocdepth >-2\relax
229       \addpenalty{-\@highpenalty}%
230       \addvspace{2.25em \@plus\p@}%
231       \setlength\@tempdima{3em}%
232       \begingroup
233         \parindent \z@ \rightskip \@pnumwidth
234         \parfillskip -\@pnumwidth
235         {\leavevmode
236           \large \bfseries
237           \UseHookWithArguments{contentsline/text/before}{4}
238             {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
239           \csname contentsline@text@-1@format\endcsname{#1}%
240           \UseHookWithArguments{contentsline/text/after}{4}
241             {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
242           \hfil
243           \hb@xt@\@pnumwidth{\hss
244             \UseHookWithArguments{contentsline/page/before}{4}
245               {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
246             #2%
247             \UseHookWithArguments{contentsline/page/after}{4}
248               {\toclevel@part}{#1}{#2}{\@contentsline@destination}%
249             \kern-\p@\kern\p@}}\par
250         \nobreak
251       \endgroup
252     \fi}
253   \renewcommand*\l@chapter[2]{%
254     \ifnum \c@tocdepth >\m@ne
255       \addpenalty{-\@highpenalty}%
256       \vskip 1.0em \@plus\p@
257       \setlength\@tempdima{1.5em}%
258       \begingroup
259         \parindent \z@ \rightskip \@pnumwidth
260         \parfillskip -\@pnumwidth
261         \leavevmode \bfseries
262         \advance\leftskip\@tempdima
263         \hskip -\leftskip
264         \UseHookWithArguments{contentsline/text/before}{4}
265           {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
266         \csname contentsline@text@0@format\endcsname
267           {#1}%
268         \UseHookWithArguments{contentsline/text/after}{4}
269           {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
270         \nobreak\hfil
271         \nobreak\hb@xt@\@pnumwidth{\hss
272           \UseHookWithArguments{contentsline/page/before}{4}
273             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
274           #2%
275           \UseHookWithArguments{contentsline/page/after}{4}
276             {\toclevel@chapter}{#1}{#2}{\@contentsline@destination}%
277           \kern-\p@\kern\p@}\par
278         \penalty\@highpenalty

```



```
279     \endgroup
280   \fi}
281 }
282 </package>
```