

# The `latex-lab-toc` package

## Changes related to the tagging of toc and similar lists

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### Abstract

Header for the testphase package

```
1 <*header>
2 \ProvidesExplPackage {latex-lab-testphase-toc} {\ltlabtocdate} {\ltlabtocversion}
3   { Code related to the tagging of toc-like lists}
4 </header>
```

## 1 Introduction

The followings contains various functions related to the tagging of the table of contents and similar list.

The structure of tocs consist of nested TOC and TOCI structures. The code uses the first argument of the `\contentsline` command to detect the level and to decided if a structure should be closed. The structure that should be used in `/Ref` key to link to the heading is detected from the target name in the fourth argument – because of this with this code such a target name is created and stored also if `hyperref` is not loaded.

### 1.1 Manual toc additions

As the `/Ref` key relies on the target name, manual `\addcontentsline` commands must ensure that they reference the right structure. If an unnumbered heading command is used before this is normally the case, so the following should work fine:

```
\chapter*{Unnumbered}
\addcontentsline{toc}{chapter}{Unnumbered}
```

If there is no heading command a target name must be created manually *inside the right structure* with `\MakeLinkTarget`:

```
\noindent % start e.g. P-structure
\MakeLinkTarget*{unnumbered}% target inside the P-structure
Unnumbered
\addcontentsline{toc}{chapter}{Unnumbered}
```

```
5 <*package>
6 <@@=tag>
```

---

\*Initial implementation done by Ulrike Fischer

## 2 Temporary variables

`\l__tag_toc_tmpa_tl`

```
7 \tl_new:N \l__tag_toc_tmpa_tl
```

*(End of definition for \l\_\_tag\_toc\_tmpa\_tl.)*

## 3 General struct commands

The following variables and commands are not restricted to toc, but probably will be need in other places too.

`\g__tag_struct_dest_num_prop`

This variable records for (some or all, not clear yet) destination names the related structure number to allow to reference them in a Ref. The key is the destination. Defined by tagpdf.

*(End of definition for \g\_\_tag\_struct\_dest\_num\_prop.)*

`\refstepcounter` doesn't use `\MakeLinkTarget` (yet) so we have to patch it too to store the relation between destination names/`\@currentHref` and structure numbers

The property is set up in tagpdf-test so that one doesn't has to check if the prop exists or not.

```
8 \AddToHook{cmd/refstepcounter/after}
9 {
10   \tl_if_blank:VF \@currentHref
11     {
12       \prop_gput:Nee \g__tag_struct_dest_num_prop {\@currentHref}{\tag_get:n{struct_num}}
13     }
14 }
15 \AddToHook{cmd/H@refstepcounter/after}
16 {
17   \tl_if_blank:VF \@currentHref
18     {
19       \prop_gput:Nee \g__tag_struct_dest_num_prop {\@currentHref}{\tag_get:n{struct_num}}
20     }
21 }
```

`\g__tag_struct_ref_by_dest_prop`

This variable contains structures whose Ref key should be updated at the end to point to structured related with this destination. As this is probably need in other places too, it is not only a toc-variable. Moved into tagpdf!

*(End of definition for \g\_\_tag\_struct\_ref\_by\_dest\_prop.)*

`\g__tag_struct_ref_by_dest:`

This command is executed and update the Ref keys of the structures listed in `\g__@@_struct_ref_by_dest_prop`. It is currently only relevant for the TOCI. But other structures could need that later too. The command is executed in the tagpdf/finish/before hook.

```
22 \msg_new:nnn { tag } {struct-dest-unknown}
23 {
24   Destination~#1~has~no~related~structure.\\
25   /Ref~for~structure~#2~not~updated
26 }
27
28 \cs_new_protected:Npn \g__tag_struct_ref_by_dest:
```

```

29 {
30   \prop_map_inline:Nn\g__tag_struct_ref_by_dest_prop
31   {
32     \prop_get:NnNTF \g__tag_struct_dest_num_prop {##2} \l__tag_tmpa_tl
33     {
34       \__tag_struct_gput_data_ref:ee
35       { ##1 }
36       { \tag_struct_object_ref:ef \l__tag_tmpa_tl }}
37     }
38     {
39       \msg_warning:nmmm {tag}{struct-dest-unknown}{##2}{ ##1}
40     }
41   }
42 }
43 \hook_gput_code:nmm {tagpdf/finish/before}{tagpdf/struct/Ref}{\g__tag_struct_ref_by_dest:}

```

*(End of definition for \g\_\_tag\_struct\_ref\_by\_dest:.)*

## 4 Toc code

`\g__tag_toc_level_int` `\g__tag_toc_stack_seq` `\g__tag_toc_level_int` records in a toc the current absolute level. We must close open structures at the end of the toc, for this we maintain a stack `\g__tag_toc_stack_seq`.

```

44 \int_new:N \g__tag_toc_level_int
45 \seq_new:N \g__tag_toc_stack_seq

```

*(End of definition for \g\_\_tag\_toc\_level\_int and \g\_\_tag\_toc\_stack\_seq.)*

`\_tag_toc_starttoc_init:n` The init code clears the stack, and set the level to -100 and start to TOC structure. We also disable paratagging. The `/Title` is currently simply the type, but this could be done nicer.

```

46 \cs_new_protected:Npn \_tag_toc_starttoc_init:n #1
47 {
48   \bool_set_false:N \l__tag_para_bool
49   \seq_gclear:N \g__tag_toc_stack_seq
50   \int_gset:Nn \g__tag_toc_level_int {-100}
51   \tag_struct_begin:n{tag=TOC,title=#1}
52 }

```

Now map it into the config point:

```

53 \cs_set_protected:Npn \@starttoc@cfgpoint@before#1
54 {
55   \_tag_toc_starttoc_init:n{#1}
56 }

```

*(End of definition for \\_tag\_toc\_starttoc\_init:n. This function is documented on page ??.)*

`\_tag_toc_starttoc_finalize:`

```

57 \cs_new_protected:Npn \_tag_toc_starttoc_finalize:
58 {
59   \int_step_inline:mn
60     {\seq_count:N \g__tag_toc_stack_seq }
61     {\tag_struct_end:}
62   \tag_struct_end:
63   \seq_gclear:N \g__tag_toc_stack_seq
64 }

```

Now map it into the config point:

```

65 \cs_set_protected:Npn \@starttoc@cfgpoint@after#1
66 {
67   \__tag_toc_starttoc_finalize:
68 }

```

*(End of definition for \\_\_tag\_toc\_starttoc\_finalize:.)*

`\__tag_toc_end:n` This commands ends all TOC on the stack with a level higher than the argument

```

69 \cs_new_protected:Npn \__tag_toc_end:n #1
70 {
71   \seq_get:NNT\g__tag_toc_stack_seq \l__tag_toc_tmpa_tl
72   {
73     \bool_lazy_and:nnT
74     {
75       \str_if_eq_p:ee{\tl_head:N\l__tag_toc_tmpa_tl}{TOC}
76     }
77     {
78       \int_compare_p:nNn {#1}<{\tl_tail:N \l__tag_toc_tmpa_tl}
79     }
80     {
81       \seq_gpop:NN\g__tag_toc_stack_seq \l__tag_toc_tmpa_tl
82       \tag_struct_end:
83       \__tag_toc_end:n{#1}
84     }
85   }
86 }
87 \cs_generate_variant:Nn \__tag_toc_end:n {e}

```

*(End of definition for \\_\_tag\_toc\_end:n.)*

`\__tag_toc_contentsline_begin:nnn` This is main command executed at the begin of a `\contentsline`.

```

88 \cs_new_protected:Npn \__tag_toc_contentsline_begin:nnn #1 #2 #3 % #1 level, #2 content, #3 de
89 {
90   \tag_if_active:T
91   {

```

We detect the intended level by checking the value of `toclevel@...` (currently only provided by `hyperref`, but should be there always). To be on the safe side we set it to 1 if not defined.

```

92     \ExpandArgs{c}\providecommand { toplevel@#1 }{ 1 } % just in case ...
93     \int_compare:nNnF { \use:c{toclevel@#1} } > { \use:c{c@tocdepth} }
94     {

```

if level goes up, start new sub TOC unless we are at the begin

```

95     \bool_lazy_and:nnT
96     { \int_compare_p:nNn { \g__tag_toc_level_int } > {-100} }
97     { \int_compare_p:nNn { \use:c{toclevel@#1} } > { \g__tag_toc_level_int } }
98     {
99       \seq_gpush:Ne \g__tag_toc_stack_seq {{TOC}\use:c{toclevel@#1}}
100      \tag_struct_begin:n{tag=TOC}
101    }

```

if level goes down close all TOC's with a higher level

```

102     \int_compare:nNnT
103         { \use:c{toclevel@#1} } < { \g__tag_toc_level_int }
104         {
105             \__tag_toc_end:e { \use:c{toclevel@#1} }
106         }

```

if same level do nothing update toplevel to the current level.

```

107     \int_gset:Nn \g__tag_toc_level_int { \use:c{toclevel@#1} }

```

now open the TOCI, the tagging of the inner structure is left to the \l@xxx commands. setting the title is not strictly necessary but looks nicer but we have to remove the \numberline

```

108     \group_begin:
109     \text_declare_expand_equivalent:Nn \numberline \use_none:n
110     \exp_args:Ne \tag_struct_begin:n{tag=TOCI,title={\text_purify:n {#2}}}

```

The TOCI structure should get a /Ref, so we put a request with its destination name into the prop.

```

111     \prop_gput:Nee \g__tag_struct_ref_by_dest_prop
112         { \tag_get:n {struct_num} }{#3}
113     \seq_gpush:Ne \g__tag_toc_stack_seq {{TOCI}\use:c{toclevel@#1}}
114     \group_end:
115 }
116 }
117 }

```

Now map it into the config point:

```

118 \cs_set_protected:Npn\@contentsline@cfgpoint@before#1#2#3#4
119 {
120     \__tag_toc_contentsline_begin:nnn {#1}{#2}{#4}
121 }

```

*(End of definition for \\_\_tag\_toc\_contentsline\_begin:nnn.)*

\\_\_tag\_toc\_contentsline\_end:n This is the closing code of a \contentsline. If the contentsline was actually printed, the code has to close the TOCI structure and to update the stack.

```

122 \msg_new:nnn {tag}{toc-no-TOCI}{Missing-TOCI-structure-on~toc~stack}
123
124 \cs_new_protected:Npn \__tag_toc_contentsline_end:n #1 %#1 level name
125 {
126     \int_compare:nNnF { \use:c{toclevel@#1} } > { \use:c{c@tocdepth} }
127     {
128         \seq_gpop:NNT \g__tag_toc_stack_seq\l__tag_tmpa_tl
129         {
130             \str_if_eq:eeTF{\tl_head:N\l__tag_tmpa_tl}{TOCI}
131             {
132                 \tag_struct_end:
133             }
134             {
135                 \msg_warning:nn{tag}{toc-no-TOCI}
136             }
137         }
138     }
139 }

```

Now we map it to the config point

```
140 \cs_set_protected:Npn \@contentsline@cfgpoint@after #1#2#3#4
141 {
142   \__tag_toc_contentsline_end:n {#1}
143 }
```

*(End of definition for \\_\_tag\_toc\_contentsline\_end:n.)*

## 4.1 Tagging of the content

This need discussion.

```
144 \AddToHook{contentsline/text/before}[tagpdf]{%
145   \tag_struct_begin:n{tag=Reference}%
146   \tag_mc_begin:n{tag=Reference}}
147 \AddToHook{contentsline/text/after}[tagpdf]{%
148   \tag_mc_end:}
149 \AddToHook{contentsline/page/before}[tagpdf]{%
150   \tag_mc_begin:n{tag=Reference}}
151 \AddToHook{contentsline/page/after}[tagpdf]{%
152   \tag_mc_end:
153   \tag_struct_end:} %Reference
154 \AddToHook{contentsline/number/before}[tagpdf]{%
155   \tag_mc_end:
156   \tag_struct_begin:n{tag=Lbl}%
157   \tag_mc_begin:n{tag=Lbl}}
158 \AddToHook{contentsline/number/after}[tagpdf]{%
159   \tag_mc_end:
160   \tag_struct_end:
161   \tag_mc_begin:n{tag=Reference}}
162 \def\@dottedtocline@cfgpoint@leaders#1{%
163   \tag_mc_begin:n{artifact}\tag_stop:n{leaders}\nobreak#1\nobreak\tag_start:n{leaders}\tag_mc_
164 }
165 \end{package}
```

Wrapper for the testphase key.

```
165 <*\latex-lab>
166 \ProvidesFile{toc-latex-lab-testphase.ltx}
167   [\ltlabtocdate\space v\ltlabtocversion latex-lab wrapper toc]
168
169 \RequirePackage{latex-lab-testphase-toc}
170
171 </\latex-lab>
```