Make link targets
hyperref bundle

The LaTeX Project*

Version 2026-11-03 v7.01t

1 Commands to create and adapt targets

This module provides commands to create targets. Their goal is to unify and replace a number of user and internal hyperref commands and to provide a clear interface for package authors and users.

1.1 The main command

\MakeLinkTarget

```
\MakeLinkTarget[⟨prefix⟩]{⟨counter⟩}
\MakeLinkTarget[⟨prefix⟩]{}
\MakeLinkTarget*{⟨manual target⟩}
```

`\MakeLinkTarget` creates a target for an internal link, (called a destination if a PDF is created). In vertical mode the target is created where the command is issued, in horizontal mode it is typically (in a PDF) raised by the current `\normalbaselineskip` (similar to the targets created by `\refstepcounter`).

The arguments allow to control the name of the target/anchor/destination. While technically any unique name (e.g. some number) would work, names related to the actual counter both simplifies the debugging and referencing destinations from external documents. Also `\autoref` makes use of the name to identify the type of a label: it splits off the part until the first period and then looks up for a defined name. So if you create a target name `ABC.CDE.1.2`, `\autoref` tries to use `\ABCautorefname`.

The name is then stored *globally*[1] in `\@currentHref` and used for example in the next `\label`. A target name must be unique across a document. It is up to the users and package authors to ensure this by following the advice given below.

Targets are not created if `\ifmeasuring@` is true.

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[1] This means that the deprecated hyperref option `localanchorname` is ignored.

A global `\@currentHref` means that the target name and the label name can get out of sync: if for example a numbered equation is used between a section and a `\label`, a reference will show the section number but a link will jump to the equation.
hyperref allows to switch to local assignment of `\@currentHref` and so to align with the other `\label` values with the (so-called experimental) option `localanchorname`. But while on a document level this can work, it makes it difficult for package authors to add reliable link targets that can be referenced if it is unclear if the assignment is local or global.
So the choice was made to set `\@currentHref` globally always (and to deprecate `localanchorname`): This is the default in hyperref since ever and it didn't lead to major problems. It has the advantage to allow to put an anchor in a box and move it around. E.g. in the following example the two `\ref` commands reference the section but the second jumps to the top of the rule:

```
\section{An example}\label{sec:title}
\newpage \raisebox{3cm}[0pt][0pt]{\phantomsection}%
\rule{1cm}{3cm}\label{sec:page2}
page two
\newpage
\ref{sec:title}, \ref{sec:page2}
```

Target names from counters

`\MakeLinkTarget[`⟨*prefix*⟩`]{`⟨*counter*⟩`}`

If the mandatory argument is not empty it is interpreted as a LaTeX counter name. The counter is not stepped by the command. If the ⟨*counter*⟩ doesn't exist, a warning is issued and no target is created.

The target name is created as expansion of ⟨*prefix*⟩`.\theH`⟨*counter*⟩ (and so both the prefix and `\theH`⟨*counter*⟩ should be expandable). The default prefix is the counter name ⟨*counter*⟩ (see below how to change this).

For example:

```
\MakeLinkTarget{section}      ⇒ section.\theHsection   ⇒ section.1.1
\MakeLinkTarget[sec]{section}⇒ sec.\theHsection
```

`\theH`⟨*counter*⟩ must be defined: `\MakeLinkTarget` does not try like other hyperref commands to construct the command on-the-fly but warns and creates no target if it doesn't exist. Be aware that if hyperref is used with the option `implicit=false` it does not predefine and create `\theH`⟨*counter*⟩ representations so targets could be missing![2]

Typically `\theH`⟨*counter*⟩ should expand to numbers and periods and make use of parent counters to give a unique representation. The prefix can be a more or less arbitrary string. Spaces are allowed (but not really recommended). A star at the end should be avoided to prevent clashes with the names created when the internal counter is used. The use of non-ASCII chars with pdflatex depends on the LaTeX version: With newer version many of them are safe and with a format 2022-06-01 or newer it should be even possible to use chars in a target name which are undeclared and can't be typeset in the document. But despite the fact that it works, it is recommended to stick to ASCII and to avoid spaces: It is unclear if all PDF viewers and editors can handle them, also they give rather unreadable names in the PDF like `(\360\237\246\206)` and so make debugging harder.

Using a special prefix can be useful if the actual counter has an internal name like e.g. `tcb@cnt@example`. `\MakeLinkTarget[tcbexample]{tcb@cnt@example}` then gives

[2] It is planned that LaTeX directly defines the `\theH`⟨*counter*⟩ for all counters created with `\newcounter`.

a nicer looking target name. Care should be taken not to clash with existing counter names and names for `\autoref` should be adjusted if needed.

The default prefix can be changed with the key `target-prefix` of `\hypersetup` which take as value two brace groups: the counter name and the new prefix. So e.g. to change the prefix of a chapter to `appendix` you can use

```
\hypersetup{target-prefix= {chapter}{appendix}}
```

Targets using the internal counter

`\MakeLinkTarget[`⟨*prefix*⟩`]{}`

If the mandatory argument is empty a target name based on an internal absolute counter is created. The counter is stepped at every call (and also by other hyperref commands). The prefix is added with a star and a period (see above for the allowed chars). The default prefix is `page`.

```
\MakeLinkTarget{}            ⇒ page*.1
\MakeLinkTarget{}            ⇒ page*.2
\MakeLinkTarget[section]{}   ⇒ section*.3
```

The hyperref command `\phantomsection` is now defined as `\MakeLinkTarget[section]{}`.

The default prefix can be changed by changing the prefix of the virtual counter `anon`:

```
\hypersetup{target-prefix= {anon}{prefix}}
```

Manual target names

`\MakeLinkTarget*{`⟨*manual target name*⟩`}`

If the starred variant is used a manual target name is created.

`\MakeLinkTarget*{destname}` is roughly equivalent to `\hypertarget{destname}{}` but unlike the latter it also raises the destination in a PDF, there is no text argument, and—most importantly—it updates `\@currentHref`, that means the target name is stored by the next `\label`, something that `\hypertarget` doesn't do). The target name is expanded, see the remarks about prefixes above regarding the allowed chars.

When creating manually targets care should be taken to avoid clashes with automatic target names. As all automatic targets contain at least one period, names without a period are recommended.

The second (text) argument of `\hypertarget` is only used if the option `nesting` is set to true—but this option isn't used anywhere (in PDF the idea of a text in the anchor or nesting of anchors makes no sense anyway but also when html is produced e.g. with `make4ht` it is not used). So probably the option will be deprecated and removed.

1.2 Manipulate the next target name

Targets are sometimes created in places where it is difficult to inject a label to retrieve the target name for use e.g. in a bookmark. The next command allows to change the next target name:

`\NextLinkTarget` `\NextLinkTarget{`⟨*manual target*⟩`}`

The command changes the next target name to ⟨*manual target*⟩. It does the same as the `\hypersetup` key `next-anchor` and also affects targets created by `\refstepcounter`.

A use case are bookmarks for the table of contents where you know that the heading will create a target:

```
\documentclass{book}
\usepackage{bookmark}

\begin{document}
\bookmark[dest=toc]{Table of Contents}
\NextLinkTarget{toc}
\tableofcontents
\chapter{A}
\end{document}
```

Hooks

`makelinktarget` The hook `makelinktarget`[3] is executed at the begin of the commands. It is inside a group and so can be used to locally change settings. See below for an example.

Suppressing the target

`\LinkTargetOn` `\LinkTargetOn`
`\LinkTargetOff` `\LinkTargetOff`

Targets are not created if `\ifmeasuring@` is true. With these commands it is also possible to switch on and off locally the creation of a target with `\MakeLinkTarget`. The switches are also honored by `\refstepcounter`[4]. This allows to suppress the target from an internal `\refstepcounter` and replace it by some manual version by using grouping:

```
\LinkTargetOff %suppress anchor in internal refstepcounter
...
\refstepcounter{...}
...
{\LinkTargetOn\MakeLinkTarget*{mytarget}} %create manual anchor
...
\LinkTargetOn
```

[3] The hook uses a plain name without reference to the hyperref package in anticipation of the move of this code into the LaTeX kernel.

[4] currently `\refstepcounter` doesn't use `\MakeLinkTarget` itself but this will probably change.

Raising the target

In horizontal mode the target is raised by the current value of `\normalbaselineskip`.

To change this the hook can be used e.g. to double the value everywhere:

```
\AddToHook{cmd/MakeLinkTarget/before}
  {\setlength\normalbaselineskip{2\normalbaselineskip}}
\leavevmode\MakeLinkTarget{section}
```

1.3 Changing all target names

`\SetLinkTargetFilter` `\SetLinkTargetFilter{⟨filter code using #1⟩}`

hyperref provides the command `\HyperDestNameFilter` to change all target names. It is applied[5] to every target name and is also used in references, but it doesn't change `\@currentHref` itself. So after

```
\renewcommand*{\HyperDestNameFilter}[1]{docA-#1}
```

you would get in the PDF everywhere the prefix `docA`

```
%destination names:
<<
/Names [(docA-Doc-Start) 7 0 R (docA-chapter.1) 8 0 R (docA-page.1) 6 0 R]
/Limits [(docA-Doc-Start) (docA-page.1)]
>>
%link to a chapter
/A << /S /GoTo /D (docA-chapter.1) >>
%link from the bookmark
<< /S /GoTo /D (docA-chapter.1) >>
```

but the label info in the `.aux` would show only `chapter.1`:

```
\newlabel{chap}{{1}{1}{Title}{chapter.1}{}}
```

and so `\autoref` is still able to extract the counter name.

`\MakeLinkTarget` uses this filter too: it would break internal link commands if it would ignore it. To stay compatible with future development the filter should not be redefined directly but be set with `\SetLinkTargetFilter`. The command can only be used in the preamble.

```
\SetLinkTargetFilter{docA-#1}
```

2 Implementation

```
⟨@@=hyp⟩
⟨*header⟩
\ProvidesExplPackage{hyperref-linktarget}{2022-06-20}{v7.00s}
  {Making targets, destinations and anchors -- module of hyperref}
⟨/header⟩
⟨package-include⟩\ExplSyntaxOn
```

[5] In the backend code, so it depends actually on the driver if it is honored or not

2.1 Variables

⟨*package⟩

\l__hyp_target_create_bool This boolean decides if a target is created at all. (it will replace `\@skiphyperref` long term)

```
\bool_new:N \l__hyp_target_create_bool
\bool_set_true:N \l__hyp_target_create_bool
```

(*End of definition for* `\l__hyp_target_create_bool`.)

makelinktarget This hook is used to adapt for example the raising

```
\hook_new:n {makelinktarget}
```

(*End of definition for* `makelinktarget`. *This function is documented on page 4.*)

2.2 Helper commands

__hyp_target_raise:n We need a command to raise the targets. It is mostly a copy from the hyperref command but we removed the hooks and use `\normalbaselineskip`. TODO: The code to save/restore the space factor should be replaced by kernel methods. change 2024-11-06: add a kern, see thm-anchor test. change 2026-02-22: use the hyp/raisedlink socket for varwidth support.

```
\cs_new_protected:Npn \__hyp_target_raise:n #1
 {
   \mode_if_vertical:TF
    { \UseSocket{hyp/raisedlink}{#1} }%
    {
     \Hy@SaveSpaceFactor
     \penalty\@M
     \smash
      {
       \box_move_up:nn
        { \normalbaselineskip }
        {
         \hbox:n
          {
           \Hy@RestoreSpaceFactor
           #1
           \Hy@SaveSpaceFactor
          }
        }
      }
     \kern0pt
     \Hy@RestoreSpaceFactor
    }
 }
```

(*End of definition for* `\__hyp_target_raise:n`.)

2.3 Providing the commands

In anticipation of the addition of the main commands to the kernel as no-ops we provide them:

```
\ProvideDocumentCommand\LinkTargetOn{}{}
\ProvideDocumentCommand\LinkTargetOff{}{}
\ProvideDocumentCommand\MakeLinkTarget{sO{}m}{}
\ProvideDocumentCommand\NextLinkTarget{m}{}
```

2.4 Target on and off switch

\LinkTargetOn
\LinkTargetOff

```
\RenewDocumentCommand\LinkTargetOn {}
 {
   \bool_set_true:N \l__hyp_target_create_bool
 }


\RenewDocumentCommand\LinkTargetOff {}
 {
   \bool_set_false:N \l__hyp_target_create_bool
 }
```

(*End of definition for* `\LinkTargetOn` *and* `\LinkTargetOff`*. These functions are documented on page 4.*)

\MakeLinkTarget This is the main command. To keep it simple we allow an optional argument also for the manual command but ignore it for now.

```
\RenewDocumentCommand\MakeLinkTarget {s O{} m}
  {
    \bool_lazy_and:nnT
      { \l__hyp_target_create_bool }
      { ! \legacy_if_p:n { measuring@ } }
      {
        \group_begin:
        \hook_use:n { makelinktarget }
        \IfBooleanTF  {#1}
          {
            \__hyp_target_manual:nn {#2}{#3}
          }
          {
            \__hyp_target_counter:nn {#2}{#3}
          }
        \group_end:
        \UseTaggingSocket{recordtarget}
      }
  }
```

(*End of definition for* `\MakeLinkTarget`*. This function is documented on page 1.*)

__hyp_target_manual:nn This is the code for the manual target name. The prefix is simply ignored.

```
\cs_new_protected:Npn  \__hyp_target_manual:nn #1 #2 %#1 prefix, #2 name
  {
    \tl_gset:Ne \@currentHref {#2}
    \hook_use:n {__hyp/target/setname}
```

```
    \@onelevel@sanitize\@currentHref
    \__hyp_target_raise:n {\hyper@anchorstart{\@currentHref}\hyper@anchorend}
  }
```

(*End of definition for* `\__hyp_target_manual:nn`.)

`\__hyp_target_counter:nn` The code for counter related targets must be split into the case where the internal counter is used, and where a user counter is used

```
\cs_new_protected:Npn \__hyp_target_counter:nn #1 #2  %#1 prefix, #2 counter or empty
  {
    \tl_if_blank:nTF {#2}
      {
        \__hyp_target_counter_anon:n {#1}
      }
      {
        \__hyp_target_counter_doc:nn {#1}{#2}
      }
  }

```

(*End of definition for* `\__hyp_target_counter:nn`.)

`\__hyp_target_counter_anon:n` This creates the target with the internal count. We use the same (tex) count `\Hy@linkcounter` than the other hyperref commands.

```
\cs_new:Npn \__hyp_target_anon_prefix: {page}
\cs_new_protected:Npn \__hyp_target_counter_anon:n #1
  {
    \int_gincr:N\Hy@linkcounter
    \tl_gset:Ne \@currentHref
      {
        \tl_if_blank:nTF {#1}
         {\__hyp_target_anon_prefix:}
         {#1}*
         .\int_use:N\Hy@linkcounter
      }
    \hook_use:n {__hyp/target/setname}
    \@onelevel@sanitize\@currentHref
    \__hyp_target_raise:n {\hyper@anchorstart{\@currentHref}\hyper@anchorend}
  }
```

(*End of definition for* `\__hyp_target_counter_anon:n`.)

`\__hyp_target_counter_doc:nn` And now the target with the user counter. We warn if the counter or the representation doesn't exist

```
\cs_new_protected:Npn \__hyp_target_counter_doc:nn #1 #2
  {
    \bool_lazy_or:nnTF { \cs_if_free_p:c {c@#2} } { \cs_if_free_p:c {theH#2} }
      {
        \PackageWarning {hyperref}{Counter~'#2'~or~the~representation~'\string\theH#2`\Messag
        don't~exist.~No~target~created.}{}
      }
      {
        \tl_gset:Ne \@currentHref
         {
           \tl_if_blank:nTF{#1}
```

```
              {\cs_if_exist_use:cF {__hyp_target_#2_prefix:}{#2}}
              {#1}
            .\use:c{theH#2}
         }
        \hook_use:n {__hyp/target/setname}
        \@onelevel@sanitize\@currentHref
        \__hyp_target_raise:n {\hyper@anchorstart{\@currentHref}\hyper@anchorend}
      }
  }
```

(*End of definition for* `\__hyp_target_counter_doc:nn`.)

```
\cs_new_protected:Npn \__hyp_target_set_prefix:nn #1#2
 {
   \cs_if_exist:cTF { __hyp_target_#1_prefix: }
    {
      \cs_set:cpn
    }
```

New definitions are global, so we need to ensure that the default uses the counter name if the target key is set in a group.

```
    {
      \cs_new:cpn { __hyp_target_#1_prefix: }{#1}
      \cs_set:cpn
    }
    { __hyp_target_#1_prefix: }{#2}
 }
\define@key{Hyp}{target-prefix}
 {
   \__hyp_target_set_prefix:nn #1
 }
\keys_define:nn{hyp}
 { target-prefix .code:n = \__hyp_target_set_prefix:nn #1 }

```

`\NextLinkTarget` we rely on the internal hook to set the next target name:

```
\RenewDocumentCommand\NextLinkTarget {m}
  {
    \hook_gput_next_code:nn {__hyp/target/setname}
      {
        \tl_gset:Ne \@currentHref {#1}
      }
  }

```

(*End of definition for* `\NextLinkTarget`. *This function is documented on page* 4.)

`\SetLinkTargetFilter` This is an interface to `\HyperDestNameFilter`

```
\NewDocumentCommand\SetLinkTargetFilter {m}
  {
    \cs_set:Npn \HyperDestNameFilter ##1 {#1}
  }
\@onlypreamble \SetLinkTargetFilter
```

(*End of definition for* `\SetLinkTargetFilter`. *This function is documented on page* 5.)

```
⟨/package⟩
⟨@@=⟩.
⟨package-include⟩\ExplSyntaxOff
```