The l3graphics package
Graphics inclusion support

The LaTeX3 Project*

Released 2020-06-03

1 l3graphics documentation

1.1 Driver functions

Inclusion of graphic files requires a range of low-level data be passed to the driver layer. These functions are primarily aimed at supporting this work.

`\l_graphics_decodearray_tl` Array to decode color in bitmap graphic: when non-empty, this should be in the form of one, two or three pairs of real numbers in the range $[0, 1]$, separated by spaces.

`\l_graphics_interpolate_bool` Indicates whether interpolation should be applied to bitmap graphic files.

`\l_graphics_page_int` The page to extract from a multi-page graphic file: used for `.pdf` files which may contain multiple pages.

`\l_graphics_pagebox_tl` The nature of the page box setting used to determine the bounding box of material: used for `.pdf` files which feature multiple page box specifications.

`\l_graphics_draft_bool` Switch to enable draft mode: graphics are read but not included when this is true.

`\l_graphics_llx_dim`
`\l_graphics_lly_dim`
`\l_graphics_urx_dim`
`\l_graphics_ury_dim` Dimensions which return the points $(\langle llx \rangle, \langle lly \rangle)$ and $(\langle urx \rangle, \langle ury \rangle)$ for the graphic. For many graphics only the resulting height and width are significant, but this is driver-dependent.

`\l_graphics_name_bool` The name of a graphics file being loaded: usually the same as the input file name, but may be altered by some drivers.

*E-mail: latex-team@latex-project.org

\graphics_bb_save:n
\graphics_bb_save:x
\graphics_bb_restore:nF
\graphics_bb_restore:xF

```
\graphics_bb_save:n {⟨graphic⟩}
\graphics_bb_restore:nF {⟨graphic⟩} {⟨false code⟩}
```

This pair of functions are used to cache the bounding box of an ⟨*graphic*⟩ so that extraction/reading is only required once. The `save` function stores the values from `\l_graphics_llx_dim`, `\l_graphics_lly_dim`, `\l_graphics_urx_dim` and `\l_graphics_ury_dim` as constants. The `restore` function will then look up values for the bounding box of an ⟨*graphic*⟩ and set the four dimensions appropriately. For any one ⟨*graphic*⟩ the bounding box will be constant, so the `save` function should only be called once. Thus a typical use case is

```
\graphics_bb_restore:nF { <name> }
  {
    % Code to read the bb
    \graphics_bb_save:n { <name> }
  }
```

i.e. every use of a bounding box will attempt to restore saved data, and saving will only take place where that is not possible.

Note that the ⟨*graphic*⟩ may not be a simple file name: a multi-page PDF, for example, will need to have the bounding box cached for each page used.

\graphics_extract_bb:n

```
\graphics_extract_bb:n {⟨file⟩}
```

Extracts bounding box data for the graphic ⟨*file*⟩ using the `extractbb` utility, and stores the bounding box of the graphic file in `\l_graphics_llx_dim`, `\l_graphics_lly_dim`, `\l_graphics_urx_dim` and `\l_graphics_ury_dim`.

The ⟨*file*⟩ name should be fully-qualified and sanitized: no search or other manipulation is carried out at this level. No check is made on the file *type* at this stage: it is assumed that the driver code using this function has made such a check. File types such as `.pdf` and `.jpg` are appropriate for parsing using this function.

When `\l_graphics_page_int` is positive the appropriate page will be queried from the graphic file.

Note that this function requires pipe shell calls to be enabled: this is generally true but may require the option `--enable-pipes` to be enabled when running the TEX job.

\graphics_read_bb:n

```
\graphics_read_bb:n {⟨file⟩}
```

Parses the graphic ⟨*file*⟩ to find a PostScript-style bounding box line of the form

```
%%BoundingBox: llx lly urx urx
```

where ⟨*llx*⟩, ⟨*lly*⟩, ⟨*urx*⟩ and ⟨*ury*⟩ are the corners of the bounding box expressed in PostScript ("big") points. The values are stored in `\l_graphics_llx_dim`, `\l_graphics_lly_dim`, `\l_graphics_urx_dim` and `\l_graphics_ury_dim`.

The ⟨*file*⟩ name should be fully-qualified and sanitized: no search or other manipulation is carried out at this level. No check is made on the file *type* at this stage: it is assumed that the driver code using this function has made such a check. File types such as `.eps` and `.bb`/`.xbb` are appropriate for parsing using this function.

\graphics_include:n
\graphics_include:nn

```
\graphics_include:n {⟨file⟩}
\graphics_include:nn {⟨file⟩} {⟨type⟩}
```

Horizontal-mode commands which include the ⟨*file*⟩ as an graphic at the current location. The file ⟨*type*⟩ is given explicitly in the two-argument version, or is inferred from the file extension extracted in the single-argument form. The exact graphic types supported depend upon the driver in use.

Where the ⟨*file*⟩ is not found and the ⟨*type*⟩ is *not* given, a search for possible graphic files is undertaken using the extensions stored in `\l_graphics_search_ext_seq`.

\l_graphics_ext_type_prop

Defines mapping between file extensions and file types; where there is no entry for an extension, the type is assumed to be the extension with the leading `.` removed. Entries should be made in lower case, and the key should be an extension including the leading `.`, for example

```
\prop_put:Nnn \l_graphics_ext_type_prop { .ps } { eps }
```

\l_graphics_search_ext_seq

Extensions to use for graphic searching when the given ⟨*file*⟩ name is not found by `\graphics_include:n`.

\l_graphics_search_path_seq

Each entry is the path to a directory which should be searched when seeking an graphic file. Each path can be relative or absolute, and should not include the trailing slash. The entries are not expanded when used so may contain active characters but should not feature any variable content. Spaces need not be quoted.

\graphics_show_list:
\graphics_log_list:

```
\graphics_show_list:
\graphics_log_list:
```

These functions list all graphic files loaded by in a similar manner to `\file_show_list:` and `\file_log_list:`. While `\graphics_show_list:` displays the list in the terminal, `\graphics_log_list:` outputs it to the log file only. In both cases, only graphics loaded by l3graphics are listed.

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The italic numbers denote the pages where the corresponding entry is described, numbers underlined point to the definition, all others indicate the places where it is used.