

The packetprinting package

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1 Introduction

This packet is quite similar to *bytefield*¹ but I wasn't aware of that packet at the time writing this. The main difference is that this packet uses a different style (alternating background colors to easy read out the offsets). Also as it uses tikz to draw the contents you are quite flexible to add further items to the packet (like arrows etc.).

2 Usage

Load this package as `\usepackage{packetprinting}`.

`packetprinting (env.)` `\begin{packetprinting}[opts]...\end{packetprinting}`

This is the core environment of this package. Within it you can use `\addField` and `\skipRow`. At its end it will also draw the packet table.

Before printing the table, the environment will set `\tabcolsep` to `\packetcolsep` (new length defined by this package).

`opts` are optional arguments (enclosed with `{}`) separated with `,`:

`cols` Amount of columns you want per line. *Default: 32*

`scale` If you want a slim table and/or want many columns per line, you might not want every column drawn. With this parameter you can specify e.g. that only every second column should be shown. *Default: 1* **Note:** `cols` needs to be a multiple of `scale`!

`hideHeader` Whether to print the header with the bit numbers or not.

`\addField` `\addField[opts]`

`opts` are optional arguments (enclosed with `{}`) separated with `,`:

`from` Bit-index where the field shall start.

`to` Bit-index where the field shall end.

`node` name of the node fitting the complete field which can be used for further reference (e.g. in a tikzpicture with `remember picture` set). *Default: "default"*

¹<https://ctan.org/pkg/bytefield>

- c1 Content to write into the field. *Default:* ""
- c2 If the field spans multiple rows, this is the content to write into the last row of the field. *Default:* ""
- c3 If the field spans multiple rows, this is the content to write into the middle rows of the field. *Default:* ""

Hint: `from` and `to` are evaluated as lua expression, so you can also do some calculations here (like: `8*2-1`).

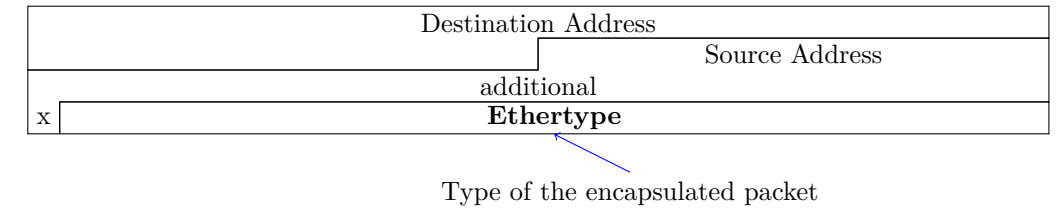
`\skipRow` `\skipRow[opts]` This commands allows to collapse long fields (populating many lines) by skipping some lines and placing a \approx sign at the end of the last line before skipping.
 `opts` are optional arguments (enclosed with `{}`) separated with `,`:

`from` Row which to skip from
`to` Row which to skip to

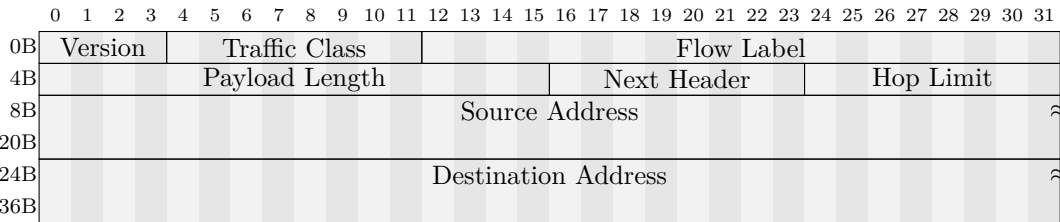
Note: `from` and `to` are given as bit-offsets. Also note that you cannot include the first and last row of a field in the collapsed section.

3 Examples

3.1 Example 1



3.2 Example 2



4 Implementation

```

1 \RequirePackage{tikz}
2 \usetikzlibrary{calc,fit}
3 \RequirePackage{pgfkeys}
4 \RequirePackage{nicematrix}
5 \RequirePackage{luapackageloader} % use the default lua path as well

```

```

6 \directlua{pp = require("packetprinting")}
7 \pgfkeys{
8   /packetprinting/env/.cd,
9   cols/.initial=32,
10  scale/.initial=1,
11  hideHeader/.initial=false, hideHeader/.default=true,
12  /packetprinting/skip/.cd,
13  from/.initial=0, from/.value required,
14  to/.initial=0, to/.value required,
15  /packetprinting/cmd/.cd,
16  from/.initial=0, from/.value required,
17  to/.initial=8, to/.value required,
18  node/.initial={default},
19  c1/.initial={},
20  c2/.initial={},
21  c3/.initial={},
22 }

```

packetprinting (*env*.)

```

23 \newlength{\packetcolsep}
24 \setlength{\packetcolsep}{1pt}
25 \newenvironment{packetprinting}[1] [] {%
26   \pgfkeys{/packetprinting/env/.cd, #1}%
27   \directlua{pp.reset(%
28     \pgfkeysvalueof{/packetprinting/env/cols},%
29     \pgfkeysvalueof{/packetprinting/env/scale}%
30   )}%
31   \NewDocumentCommand{\skipRow}{0{}}{%
32     \pgfkeys{/packetprinting/skip/.cd, ##1}%
33     \directlua{%
34       pp.skip(%
35         \pgfkeysvalueof{/packetprinting/skip/from},%
36         \pgfkeysvalueof{/packetprinting/skip/to}%
37       )%
38     }%
39   }%
40   \NewDocumentCommand{\addField}{0{}}{%
41     \pgfkeys{/packetprinting/cmd/.cd, ##1}%
42     \directlua{%
43       pp.collect(%
44         \pgfkeysvalueof{/packetprinting/cmd/from},%
45         \pgfkeysvalueof{/packetprinting/cmd/to},%
46         [[\pgfkeysvalueof{/packetprinting/cmd/node}]],%
47         [[\pgfkeysvalueof{/packetprinting/cmd/c1}]],%
48         [[\pgfkeysvalueof{/packetprinting/cmd/c2}]],%
49         [[\pgfkeysvalueof{/packetprinting/cmd/c3}]]%
50       )%
51     }%
52   }%
53 }{%
54   \directlua{pp.drawTab(\pgfkeysvalueof{/packetprinting/env/hideHeader})}%
55   \begin{tikzpicture}[remember picture, overlay]%
56     \directlua{pp.drawTikz()}%
57   \end{tikzpicture}%

```

58 }%

Change History

v.0.1.0

General: Converted to DTX file . . . [1](#)

Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

A		P		S	
<code>\addField</code> 1 , 40	<code>\packetcolsep</code>	... 23 , 24	<code>\skipRow</code> 2 , 31
E					
environments:		<code>packetprinting</code> (env.)			
<code>packetprinting</code>	1 , 23		1 , 23	