The **tikzPackets** package

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This package provide command for simple build network packets illustration with \texttt{tikz}. Similar functionality (with tables instead of \texttt{tikz}) provide package \texttt{bytefield}.

\section{Basic Example}

\begin{tikzpicture}
\packetsInit
\packetsBitWidth=4.5mm
\packetsPrintBitScale{31}
\packetsPutField{16}{Source Port}
\packetsPutField{16}{Destination Port}
\packetsEndLine{0}{}
\packetsPutField{16}{Length}
\packetsPutField{16}{Checksum}
\packetsEndLine{32}{}
\packetsPutField[protocolsField, minimum height=1.5cm]{32}{Data}
\packetsEndLine{64}{}
\end{tikzpicture}

\begin{tabular}{cccc}
0 & 1 & 2 & 3 \hline \\
Source Port & Destination Port & Length & Checksum \hline \\
64 & Data & & \\
\end{tabular}

\section{Macros description}

\subsection{packetsInit}

\texttt{\packetsInit} is used to initialise \texttt{tikzPackets} variables, counters and \texttt{tikz} styles. Must be used in every \texttt{tikzpicture} that use \texttt{tikzPackets} package commands before any other \texttt{tikzPackets} command.

\subsection{packetsPrintBitScale}

\texttt{\packetsPrintBitScale} draw bits scale. It takes one argument: last bit value.

Formatting of bits scale can be adjust by redefine (after \texttt{\packetsInit}) \texttt{tikz} style \texttt{bitScaleInfo}, redefine \texttt{\packetsBitFont} or \texttt{\packetsPrintBitNumber} macro.
2.3 packetsPutField

\packetsPutField draw packet field. It takes 4 arguments:
1. (optional) node style and formatting options
2. number of bits (width of field)
3. (optional) node name for new created node
4. name (text to display)

2.4 packetsPrintRangeOnLeft and packetsPrintRangeOnRight

\packetsPrintRangeOnLeft and \packetsPrintRangeOnRight prints info (start bit number or bits range) on left or right side of current line. Should be call after all \packetsPutField for this line. Both commands takes two arguments: first bit in line and last bit in line, but \packetsPrintRangeOnLeft ignore second argument.

Formatting of printing text can be adjust by redefine \packetsBitFont macro or redefine \packetsPrintRangeOnLeft / \packetsPrintRangeOnRight macros.

\begin{tikzpicture}
\packetsInit
\renewcommand{\packetsBitFont}{\scriptsize}
\packetsPutField{4}{A} \packetsPutField{4}{B} \packetsPutField{4}{C}
\packetsPrintRangeOnLeft{a}{b}
\packetsPrintRangeOnRight{d}{e}
\end{tikzpicture}

2.5 packetsNextLine

\packetsNextLine end current line of field and prepare to start next line of field. It don’t have arguments.

2.6 packetsEndLine

\packetsEndLine call \packetsPrintRangeOnLeft and \packetsNextLine. Arguments are passed to \packetsPrintRangeOnLeft.

2.7 packetsLastNode and packetsFirstNodeInLastLine

\packetsLastNode hold name of last added node by \packetsPutField or \packetsPrintBitScale (and is used for node positioning in \packetsPutField and \packetsPrintRangeOnRight macros).
\packetsFirstNodeInLastLine hold name of first node (added by macro \packetsPutField or \packetsPrintBitScale) in current line (and is used in \packetsPutField and \packetsPrintRangeOnLeft for positioning)

Both can be use for external to reference node adding by these macros (can be captured after add node by \edef) or can be used to start adding nodes by \packetsPutField relative to some manually added node.
\begin{tikzpicture}
\packetsInit
\packetsPutField{4}{A}
\packetsPutField{4}{B}
\node[align=left, anchor=north west, text width=7/\packetsBitWidth, node font=\footnotesize] at (\packetsFirstNodeInLastLine.south west) {
\begin{footnotesize}
Some extra info about this packet. And more more info \ldots
\end{footnotesize} }
\end{tikzpicture}

\begin{center}
\begin{tabular}{|c|c|}
\hline
A & B \\
\hline
\end{tabular}
\end{center}
Some extra info about this packet. And more more info …

3 Styles and dimensions

Width of single bit is set by \packetsBitWidth and default is 5mm. Default style for node created by \packetsPutField is protocolsField and it set line height to 1cm. Package provide also protocolsFieldBase style with minimal setting for node style. Macro \packetsBitFont define font settings for bits info. All this change should be done after use \packetsInit.

\begin{tikzpicture}
\packetsInit
\tikzstyle{protocolsField}=[protocolsFieldBase, draw, minimum height = 0.8cm]
\packetsBitWidth=10mm
\renewcommand{\packetsBitFont}{\scriptsize\it}
\packetsPrintBitScale{7}
\packetsPutField{4}{Long field names}
\packetsPutField{4}{and low rows}
\end{tikzpicture}

\begin{center}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline
9 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline
\end{tabular}
\end{center}
Long field names and low rows