

Line Numbering Extension for XEP 3.2

Abstract

This document describes the syntax of a line numbering extension to XSL language implemented in XEP 3.2, and gives code samples for typical cases.

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1. Requirements

Line numbering cannot be achieved by standard XSL FO means, and requires a proprietary extension to XSL language. What follows is a description of one such extension, implemented by RenderX in XEP XSL FO formatter, version 3.2.

The following requirements had to be met by this extension:

- It should be possible to switch line numbering on and off in the middle of a page;
- Line numbers should restart at page breaks;
- Empty space between blocks should be numbered as if it were filled by empty lines;

2. Model and Syntax

Implementation uses one empty extension element: `<rx:ruler>`. Like all other XEP extensions to XSL 1.0 recommendation, it is placed into a separate namespace: `xmlns:rx="http://www.renderx.com/XSL/Extensions"`.

This element must be first child of a `<fo:block-container>` element. It creates a vertical sequence of uniformly spaced consecutive numbers attached to the start-edge side of the parent block-container (left side for Western scripts).

Line numbers are put into a special block-area that extends to the whole height of the block-container in the block progression direction; we call it *line-number-area*. In the inline progression direction, its extent is constrained by the respective attributes on `<rx:ruler>`: **inline-progression-dimension** or **width**

 The line-number-area overlays areas generated by its parent `<fo:block-container>` element, and does not affect formatting of the block-container contents. XSL FO formatters that don't support RenderX extensions can safely skip `<rx:ruler>` tags: layout of other elements should not be affected.

The line-number-area is then filled with line areas; each line contains a single number. Numbers are generated consecutively; number format is controlled by the same properties as for page numbering. Separation between lines is set by **line-height** property on `<rx:ruler>`. Horizontal alignment of numbers within the line-number-area is governed by **text-align** trait on the same element.

The following attributes of `<rx:ruler>` element can be used to control presentation of the number sequence:

Inline progression dimension

Inline progression dimension of the line-number-area can be specified by standard attributes: **inline-progression-dimension** and its subcomponents, **width**, **min-width**, **max-width**, etc.

line-height

line-height sets vertical separation between two consecutive numbers.

text-align

text-align specifies horizontal alignment of numbers within the line-number-area. Supported values are **"start"/"left"** and **"end"/"right"**.

Number format properties

The same properties that are used to set page number format can be applied to specify number progression for lines. These properties include **format**, **grouping-separator**, **grouping-size**, and **letter-value**. Their semantics is the same as on `<fo:page-sequence>`.

Font and character properties

The full set of inheritable font and character properties can be specified on `<rx:ruler>` to control font selection for the numbers: **font-family**, **font-size**, **font-weight**, **font-style**, etc.

3. Use Example

Here is a typical case for line numbering. Complete samples can be found in [examples/linenumbering/](#) directory in XEP distribution.

```
<fo:block-container line-height="14pt" ❶
    line-stacking-strategy="font-height" ❷>
  <rx:ruler font-size="9pt" font-family="Times" ❸
    text-align="end" width="30pt" ❹/>
  <fo:block start-indent="36pt" ❺>
    Text in this paragraph will be numbered.
    ...
    ...
    ...
```

- ❶❷ The combination of fixed-length **line-height** and **line-stacking-strategy="font-height"** ensures that separation between lines is constant, thus guaranteeing proper synchronization between text lines and line numbers regardless of font changes in the body of the text.
- ❸ **Attention:** you should not use **font** shorthand attribute here (**font="9pt Times"**) because it resets **line-height** and is likely to disrupt line number alignment.

- ④ Line numbers will be aligned to the right (**text-align="end"**) on a line that is offset by 30 pt from the left edge of the block container area (**width="30pt"**).
- ⑤ Text in the body of the **fo:block-container** is indented; otherwise, line numbers would overlap it.