# Using Fixed-width Lines as rulers in Sibelius

Bob Zawalich July 17, 2019

Lines in Sibelius can have non-zero height, width, or both (vertical lines have no width, horizontal lines have no height).

The **height** of a line can always be measured in units of spaces (a space is defined as ¼ of the staff size), and so can be used as a ruler. For a given staff size, spaces can be converted into real-world units like inches, mm, or points. If you align a vertical line to another object so that the heights match, you can determine the height of the object by looking at the Y values for the line in the Inspector when it is selected.
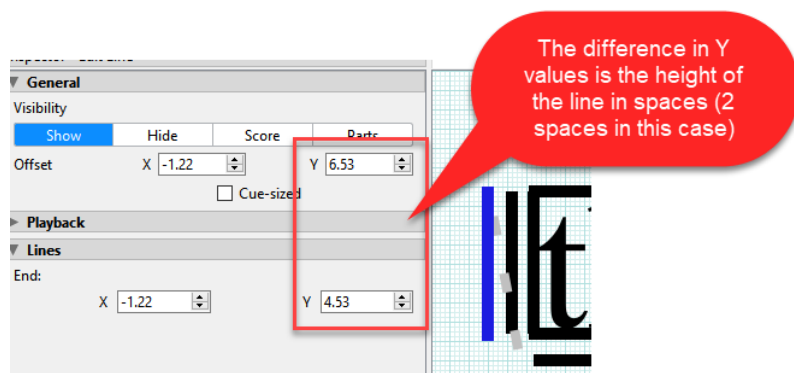
The **width** of a line is not so easily calculated.

A line has 2 endpoints, and each endpoint can be attached to a different bar or to a different rhythmic position in the same or different bar. The X and Y values shown in the Inspector are calculated in spaces **relative to the left endpoint**, and the End X and Y values are **relative to the right endpoint**. The length of a line is primarily made up of its **duration**, which is a rhythmic value (measured, for example, in quarter notes). If the number of bars in a system changes, the line very conveniently changes length correspondingly. The lines below both have a duration of 3 quarter notes, but their physical width is quite different.


There is no mechanism in Sibelius to measure the width of a line except as a combination of its duration and the X and Y offsets from either endpoint of a line. This is a mix of the flexible units of duration and the fixed (as long as the staff size does not change) units of spaces.

However, it is possible to create lines with a fixed width, where the duration is 0, and both endpoints of the line are attached to the same bar and same position in the bar. Fixed-width lines are discussed in the Scoring Notes blog post [Using Tone Clusters In Sibelius](#), and in the PDF file that is included in the download file for the **Box Line Fixed Width** plugin.

The **width of a fixed-width line** in spaces is entirely determined by the difference in the X and End X values in the Inspector.

The problems are that is is not trivial to create a fixed-width line, it can be easily changed to no longer be fixed-width, and there is no easy way to tell if a line is fixed-width.

The downloadable plugin **Box Line Fixed Width** deals with all these issues, and it **can also show you the width and height of a fixed-width line, in units of spaces and in inches, mm or points.** If you can align a fixed-width line with another object, you can use the plugin to display the object's width and height. The plugin was designed to process box lines, but it can optionally make any non-vertical line fixed-width.
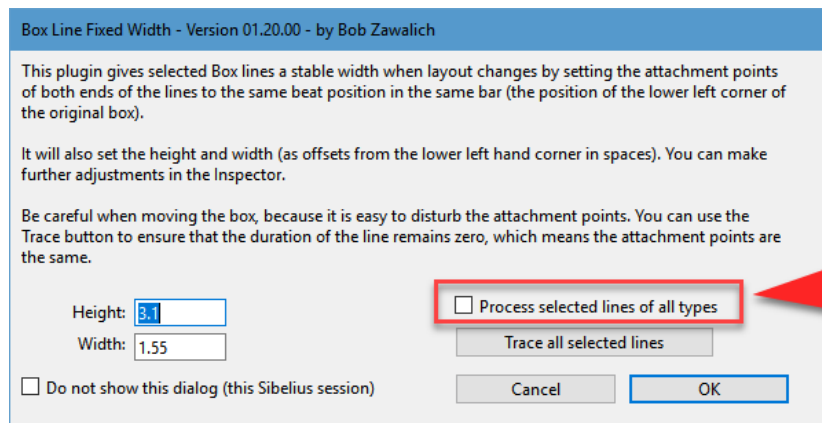
If you have an existing line (let's assume a simple straight line here), you can select it and run **Box Line Fixed Width.** Check the **Process selected lines of all types** box, **set the height to 0**, and make a guess of the width in spaces (knowing that the height of a staff is 4 spaces). When the line is created, do not drag it with the mouse or arrow keys, but only change its position with the X and Y values in the Inspector.

Once the line is where you want it to be (as in the example below where lines are matched to a block of text), you can run the plugin again, and click on **Trace all selected lines**, then cancel the dialog, and find the results in the plugin Trace window.

The trace values for each selected line show the line's duration (which will be 0 for a fixed-width line), and it shows the height and width in spaces and in the units currently selected in Document Setup. No width is shown if the line is not fixed-width.

The graphic above shows that the width and height of a **Box line** represent the dimensions of the **inside** of the box, ignoring its border (It has the same sizes as lines 3 and 4).

Fixed-width lines and changing score sizes

There are a few interesting properties of such lines when used as rulers. Since fixed-width lines will not change size if the width of a bar changes, measuring anything that does not change when bar width changes will show the same size regardless of the bar width.
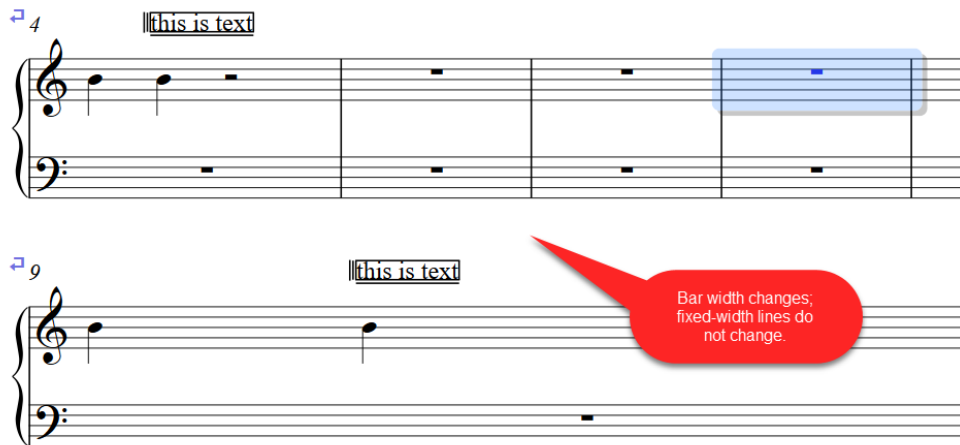
If you are measuring something like the width of a bar in spaces, that value will change and you will have to increase the line size to match.
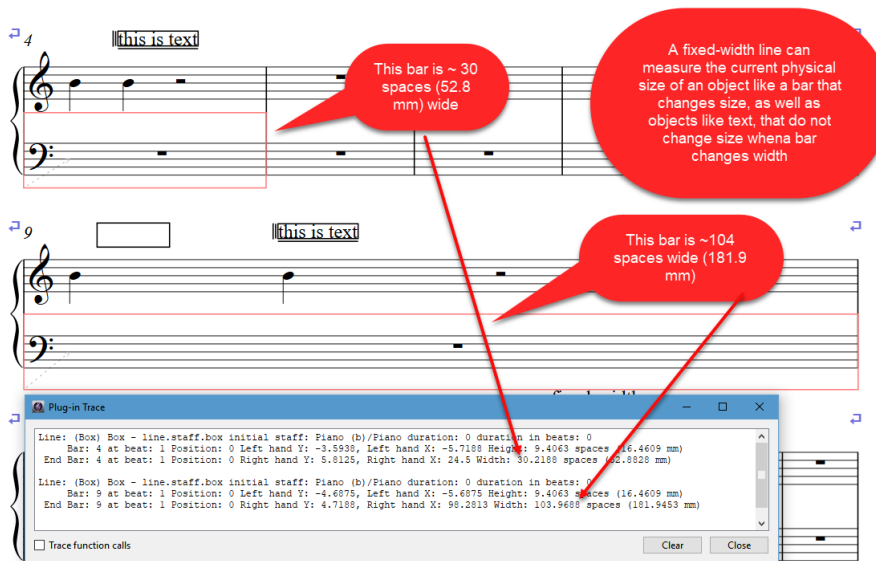
Zooming the score has no effect on the length or width of a line (in spaces), so if you measure something to be 2 inches, at a small zoom, it will still show 2 inches at a high zoom. The size is always relative to the page size when zooming.

Line: (Box) Box - line.staff.box initial staff: Piano (a)/Piano duration: 0 duration in beats: 0
    Bar: 4 at beat: 2 Position: 256 Left hand Y: 4.625, Left hand X: -0.625 Height: 1.8438 spaces (3.2266 mm)
End Bar: 4 at beat: 2 Position: 256 Right hand Y: 6.4688, Right hand X: 9.375 Width: 10 spaces (17.5 mm)

Line: (Box) Box - line.staff.box initial staff: Piano (a)/Piano duration: 0 duration in beats: 0
    Bar: 9 at beat: 2 Position: 256 Left hand Y: 4.625, Left hand X: -0.625 Height: 1.8438 spaces (3.2266 mm)
End Bar: 9 at beat: 2 Position: 256 Right hand Y: 6.4688, Right hand X: 9.375 Width: 10 spaces (17.5 mm)

Increasing zoom does not change the space size, and the width is unchanged compared to lower zoom.

If you change the staff size it will show the same number of spaces, **but the size of a space has changed,** so the width in spaces is unchanged, but there is a new and correct size shown in inches or mm or points.

Line: (Box) Box - line.staff.box initial staff: Piano (a)/Piano duration: 0 duration in beats: 0
    Bar: 9 at beat: 2 Position: 256 Left hand Y: 4.625, Left hand X: -0.625 Height: 1.8438 spaces (4.1484 mm)
End Bar: 9 at beat: 2 Position: 256 Right hand Y: 6.4688, Right hand X: 9.375 Width: 10 spaces (22.5 mm)

Staff size changed from 7mm to 9mm, so the size of a space changes. The box line is still 10 spaces wide, but 10 spaces is now 22.5mm, rather than 17.5 as it was at 7mm staff size.