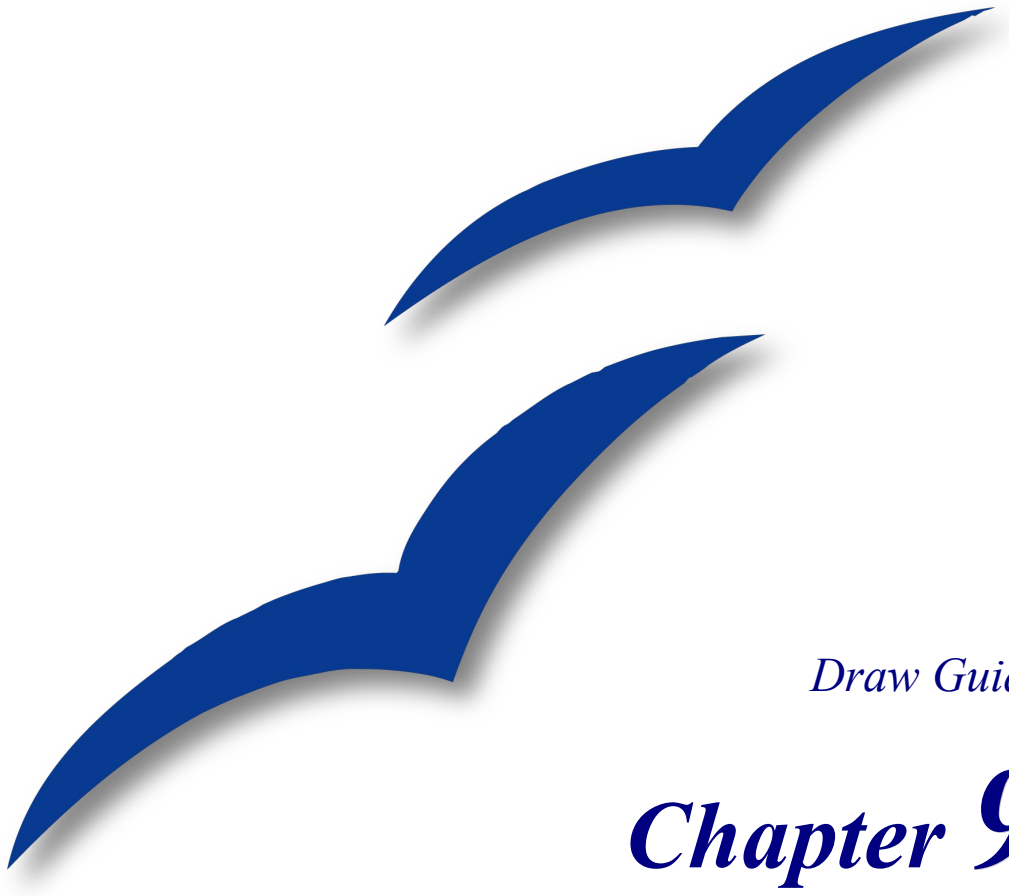

Draw Guide

Chapter 9 Organization Charts, Flow Diagrams, and More

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Drawing an organization chart

Draw offers no special toolbar for creating organization charts, where individual fields appear as rectangles. Drawing these charts presents no special problems, however. The use of different fill colors clearly represents organizational linkages and by drawing rectangles with different heights you can see the various hierarchies (see Figure 1). With a color progression from dark tones to bright, this effect can be reinforced. Watch that the color choices maintain a good contrast between text color and background so that you can easily read the printed diagram.

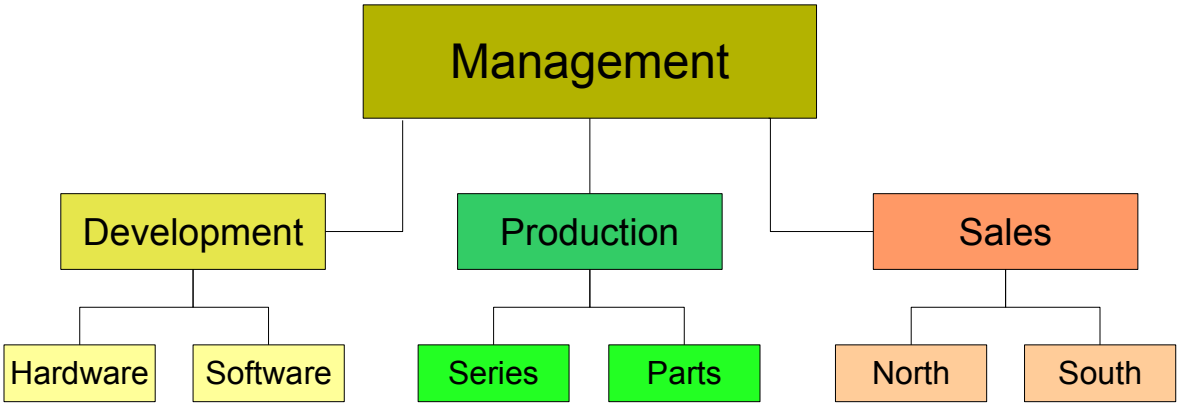


Figure 1: Example of an Organization Chart

At the beginning it is useful to prepare a setup page or draft, with snap lines, to assist in drawing the various hierarchies and responsibility paths and typical boxes that you will use in drawing the chart. Using styles can also be helpful; see the relevant section in Chapter 4 (Changing Object Attributes).

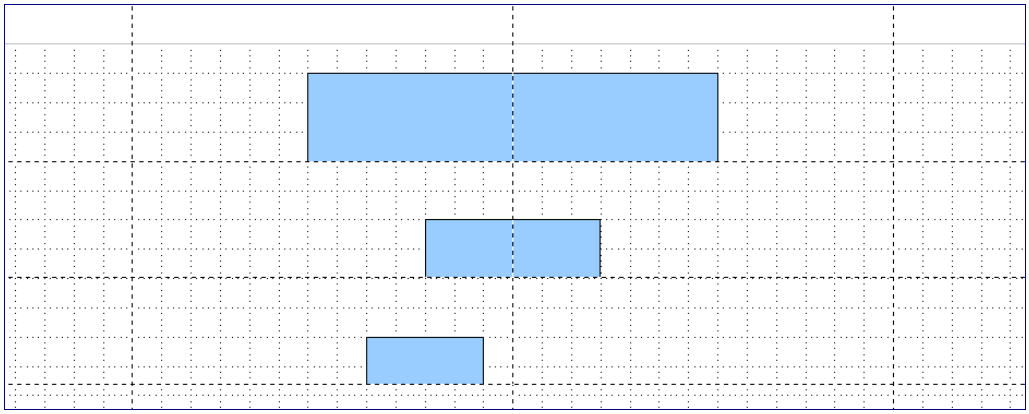


Figure 2: Draft with snap lines

Individual boxes are placed and dimensioned according to 'feel'. The exact size (particularly width), position, and color will be fixed later. It is sometimes easier to draw only one box per level, copy and paste this box and then move it to the desired position.

You can also select one or more boxes and use **Edit > Duplicate** to make copies (see Figure 3). The spacing of the duplicated objects to the original can be input in the placement fields for X and Y axes. Note that positive values for X and Y are (relative to the original object) to the right and downwards respectively.

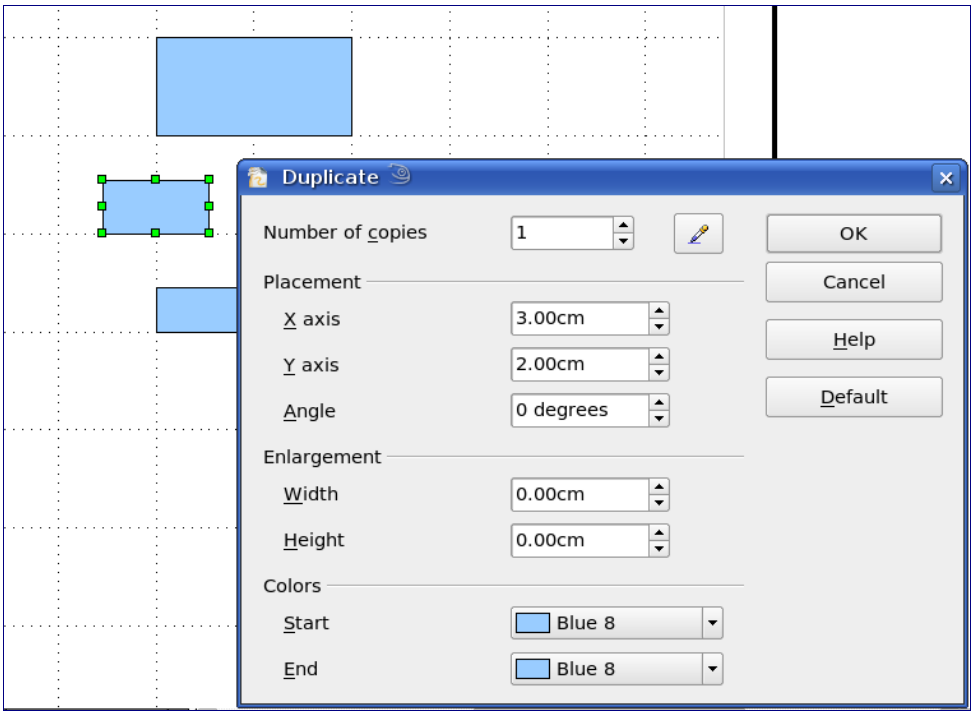


Figure 3: Duplicating an object

Which replication technique you use is up to you. The draft for the example in this chapter should look similar to that in Figure 4.

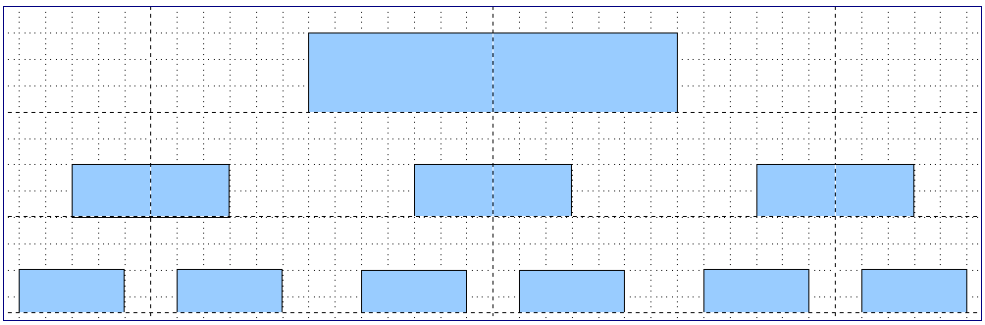


Figure 4: The finished draft

In the next step, add text to the boxes. As described in Chapter 2 (Drawing Basic Shapes), the text is best input as an element in the box. Activate the icon on the Options toolbar and then double-click the box to enter text into it. Alternatively, select the box and press *F2*. You should then see a blinking cursor in the box and the Text Formatting toolbar should be visible.

Set the text formatting and type the text. Depending on the length and formatting of the text, you may need to adjust the size of the box and the spacing to neighboring boxes. Adjustments can be made initially with the mouse and then fine-tuned with the Position and Size dialog.

Now you can set up the fill colors and save the drawing. The connections between the boxes are not drawn with ordinary lines but with Draw's *connectors*. How to draw these connectors and add text to them is described in "Glue points and connectors" starting on page 4.

You can also use text frames for the boxes. These have the advantage of automatic line breaks. Figure 5 shows the individual editing steps of text input, adding lines, and setting the background color for a text frame.

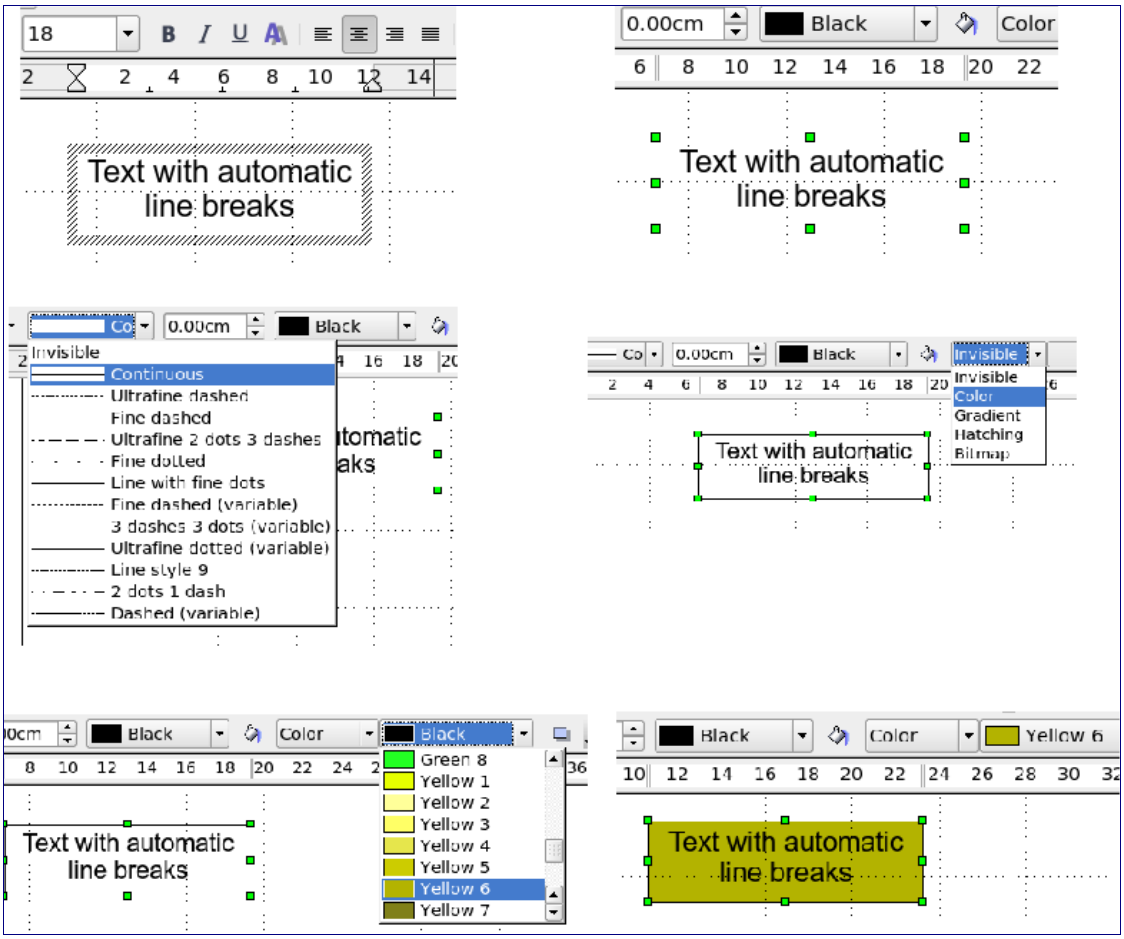


Figure 5: Working with text frames

Drawing a flow diagram

For drawing flow diagrams (also known as flowcharts), Draw offers a separate toolbar, which is reached from an icon found on the main Draw toolbar (see Figure 6).

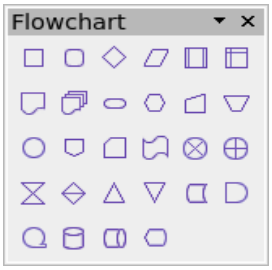


Figure 6: The Flowchart toolbar

The easiest way to draw a flowchart is to follow the same setup procedure as for organization charts. The necessary symbols are selected from the toolbar and dragged into position as described in Chapter 2 (Drawing Basic Shapes). See Figure 7 for an example of a typical flowchart.

The individual symbols must be exactly positioned if the connectors joining them are to form a vertical line. The midpoints of all the symbols that lie in a vertical straight line should have the same X coordinate and those on the same level should have the same Y coordinate.

Select the shapes that are to lie in a vertical straight line and center them with **Modify > Alignment > Centered**. For those on a horizontal line, select the shapes and center them with **Modify > Alignment > Center**.

After adding text and setting the fill color, you can join individual symbols together and add text to the connectors where necessary. This technique is described in the next section.

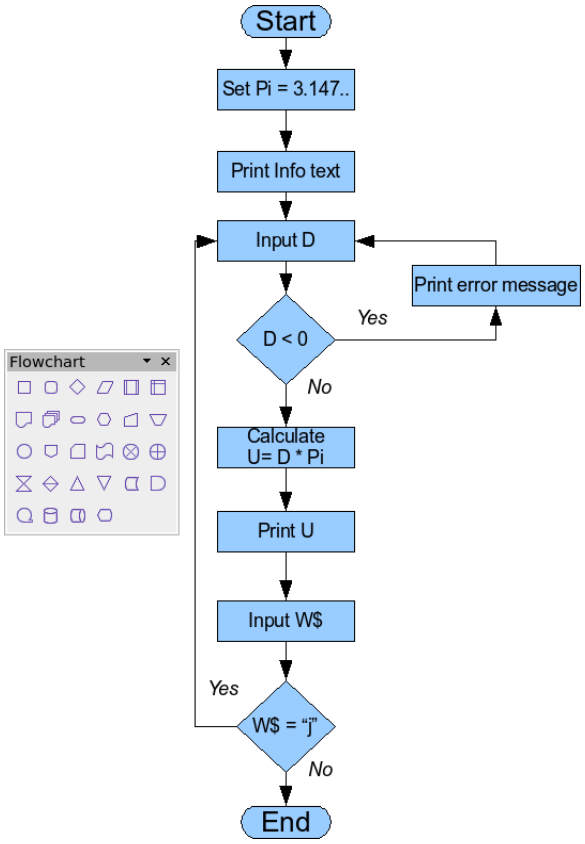


Figure 7: Example of a flow diagram

Glue points and connectors

These elements were briefly introduced in Chapter 2 (Drawing Basic Shapes). This section describes how to use them.

Connectors are lines or arrows whose ends automatically "dock" to a glue point of an object. Connectors are particularly useful when drawing organization charts, flow diagrams, and mindmaps. The connecting lines between the symbols remain intact even after moving and rearranging of the various drawing blocks.

The Connector toolbar

Click the button on the Draw toolbar to open the tearoff Connectors toolbar (Figure 8).

If the type of connector you want is not shown, click on the small black triangle in the right upper part of the Connectors toolbar. In the list that appears, click on **Visible buttons** (Figure 9). Here you can activate additional connector types.

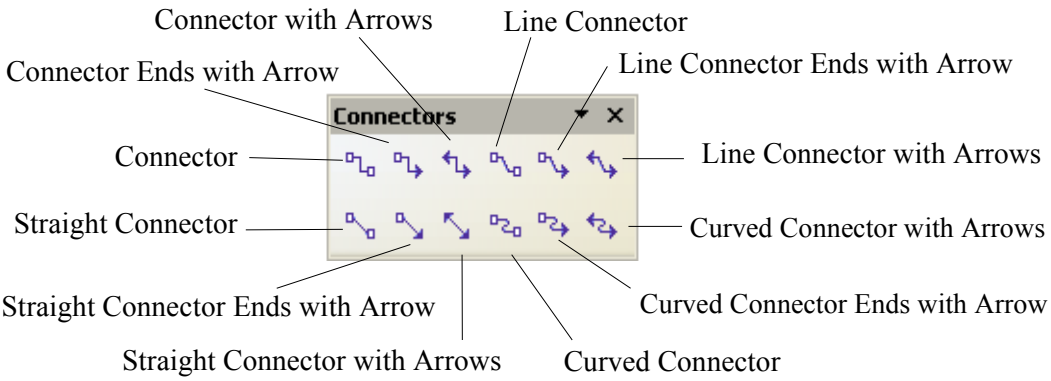


Figure 8: The Connectors toolbar

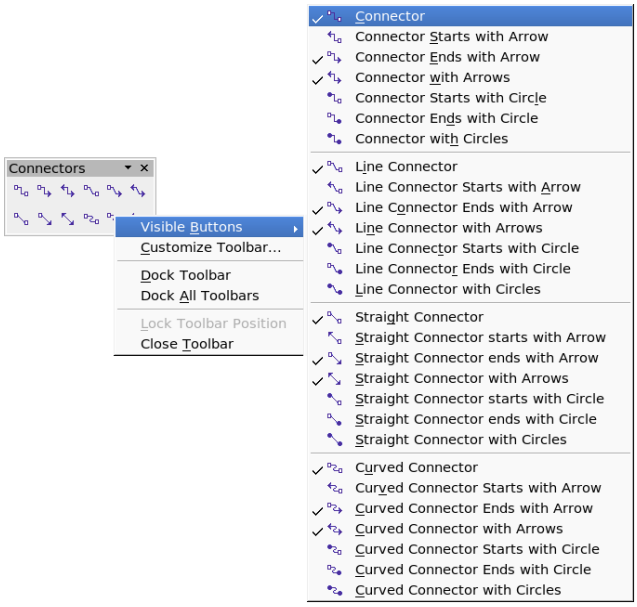


Figure 9: Activating additional connectors

Connector types fall into four groups:

- *Standard connectors* – the line segments run vertically and horizontally. All angles are right angles. The connector does not bend around the objects it binds.
- *Line connectors* – consist of a line segment and two smaller horizontal or vertical segments at the ends.
- *Straight connectors* – consist of a single line.
- *Curved connectors* – are based on Bézier curves, as described in Chapter 10 (Advanced Draw Techniques).

You can modify all the connector types. From the context menu, choose *Connector* to change from one connector type to another (as well as some other properties). With the Line dialog you can change the appearance of the line (color, arrow style, and line style) but not the connector type.

Drawing connectors—basics

When you choose a connector from the toolbar, the mouse pointer changes to . As you move the cursor over an object, the available connection (glue) points become visible. To connect two shapes, move the mouse cursor over a glue point, click and hold the left mouse button to establish the first point, and then drag the mouse cursor (left button still pressed) to the other glue point and release the mouse button. The ends of the line are now docked and the connection is established (see Figure 10).

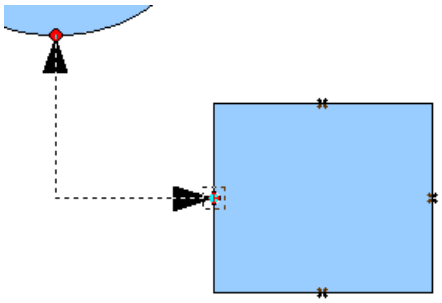


Figure 10: Gluing a connector to a shape

You can also attach the beginning or the end of a connector to the middle of an object. This is useful when the final position of the object is not yet fixed. When you move the object, Draw automatically selects the optimal location for the connector ends (see Figure 11).

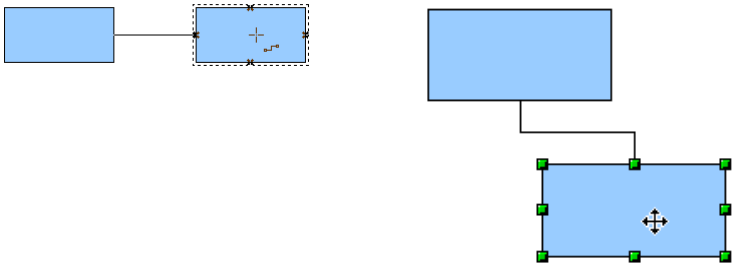


Figure 11: Connector attached to the middle of an object

As with all other objects, connectors have one or more control points to simplify the construction of the drawing. You can use these points to change the shape, length, and proportions of the connector line (see Figure 12).

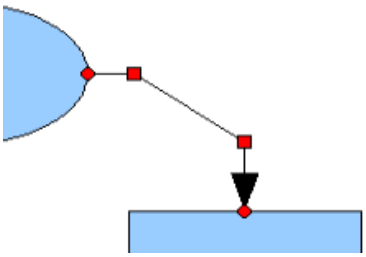


Figure 12: Control points of a connector

To remove a connector from an object, either move the end of the connector from the gluepoint of the object or simply delete the connector entirely.

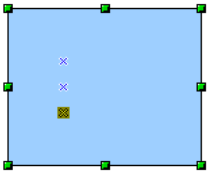
Editing glue points

Glue points can be edited using a separate toolbar (see Figure 13). This toolbar appears when you click on the *Glue Points* icon or select **Edit > Glue Points** from the main menu.

Figure 13: The Gluepoints toolbar

The following briefly describes the function of each button on this toolbar.

Use this button to insert a new glue point. Draw a new object. If the object is filled, you can place a glue point anywhere inside the object or on its frame. With unfilled objects you can place a glue point only on the outside frame, but after inserting it you can then drag it inside the object. Activate the *Glue Points* icon on the Drawing toolbar.

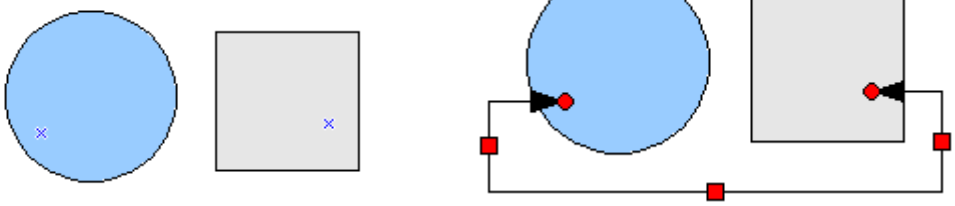


The glue points that you add remain visible as long as the *Glue Points* icon is active. They appear as small blue crosses. A selected glue point has a gray square behind the cross. You can move a selected glue point with the mouse or delete it with the *Del* key.

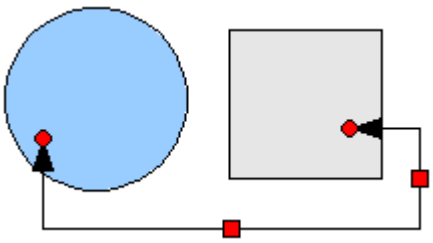
Use these four buttons to choose one or more directions permitted for a connector to join to a particular glue point.

Activate *Glue Points* and then choose the direction. If, for example, you activate only the button, every connector will be forced to come to that glue point from the left side of the point.

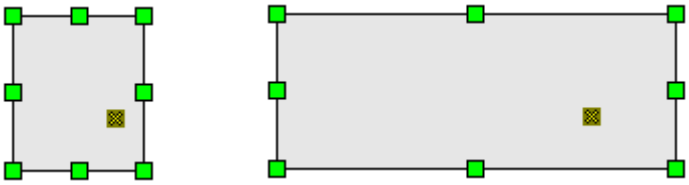
In the left drawing below is a glue point in the circle with a left entry and one in the square with a right entry. The effect of this is shown in the right drawing after adding a connector between the two glue points.



If you are in glue point editing mode and you add another direction to the glue point (for example by activating the button), Draw tries to optimize the length of the connector. For the example above, the connection inside the circle would change as shown below.



If the *Glue Point Relative* button is active (it is active by default) the glue point will move when you change the size of the object, as shown below.



If the *Glue Point Relative* button is deactivated, the remaining buttons on the toolbar, previously grayed out, become active. With these buttons you can decide how a glue point will be placed when the size of the object is changed.

These buttons determine how the horizontal position of a glue point changes when you resize the object containing the glue point. The distance of the glue point to the left edge, a vertical line through the middle, or the right edge of the object remains fixed when you change the size of the object. If the width of the object becomes less than the distance, the glue point is attached to the object frame.

The following example shows what happens when an object's width is changed and the glue point is set to be a fixed distance to the left frame.

These buttons determine in a similar manner the vertical position of a glue point when the size of the object is changed.

Adding text to connectors

To add text to a connector, double-click the connector. The end and control points become active and the familiar flashing text cursor appears (the cursor position is determined by the last used setting). The Text Formatting toolbar also appears (under the menu bar). Use this toolbar to set the desired text properties; you can directly input the text.

If you draw a connector and and then click on it, only the end and control points become active. In spite of this, a connector has its own object frame—in this case an invisible one. You can picture it easily by imagining a rectangle enclosing the start and end points of the connector (Figure 14).

When you add text to a connector, the location of the text is referenced to this rectangle. The exact position of the text can be set in the Text dialog (Figure 15). This dialog appears when you double-click on text and then choose **Text** from the pop-up menu or when you single-click on the connector and select **Format > Text** from the menu bar.

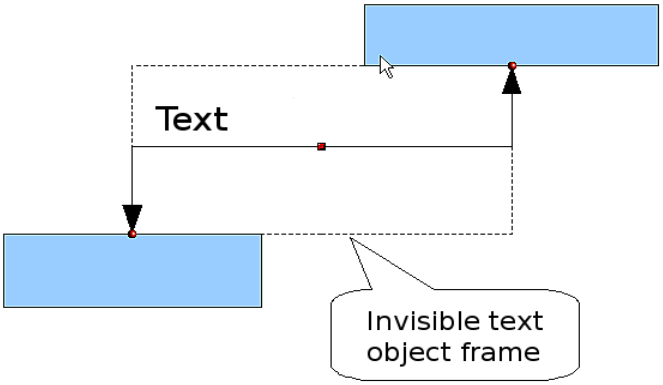


Figure 14: Object frame of a connector

Take particular note of the *Spacing to borders* and *Text anchor* sections in the Text dialog. In the *Text anchor* section you can see the possible locations for the text. In the above example the text is anchored at the top left. In the *Spacing to borders* section at the lower left you can input also negative values of spacing, to position the text outside the frame.

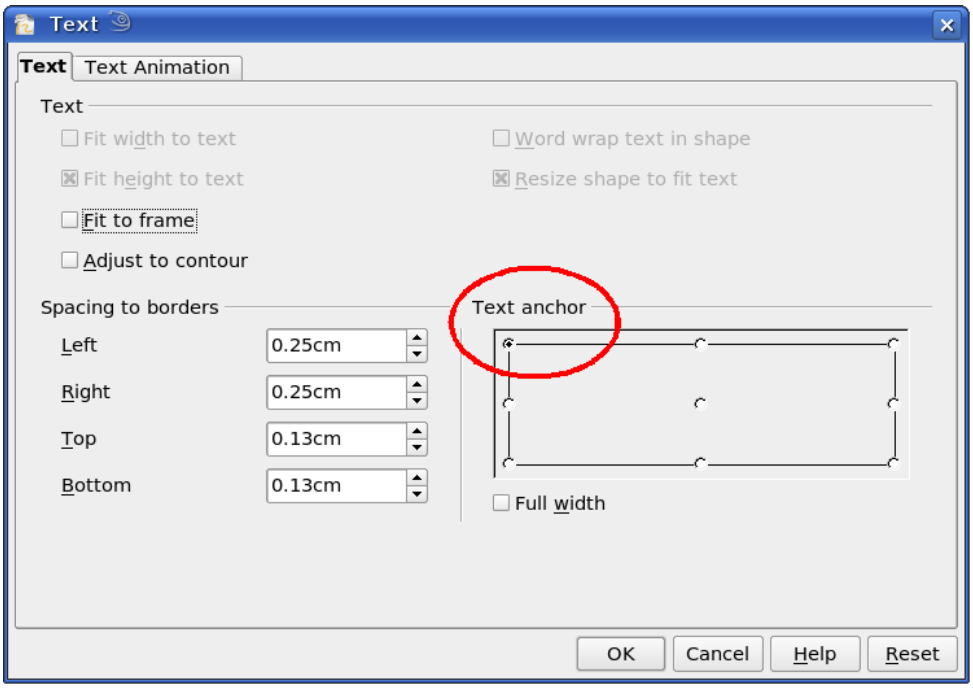


Figure 15: The Text dialog

Adjusting text to suit the connecting line

If you want the text to follow the slope or curve of a line, you need to activate and use the Fontwork tool. To add it to the Draw toolbar, choose **Tools > Customize** from the menu bar. On the Toolbars tab, in the upper pulldown list of toolbars choose *Drawing*. In the *Toolbar content* section, click **Add**. On the Add Commands dialog, select the Category *Format* and the Command *Fontwork*. Click **Add**, then **Close**. Back on the Customize dialog, in the list of commands under *Toolbar Content,* move the Fontwork icon to the location you want and then click **OK**.

To write slanting text, two steps are necessary. First, add the text to the connector as described earlier. The anchor location of the text is not important at this stage. Second, select the object with the text (in this case the connector) and click on the Fontwork icon to open the Fontwork dialog.

To make the text lie along the inclined line, click the **Rotate** icon and set the distance to the line you wish.

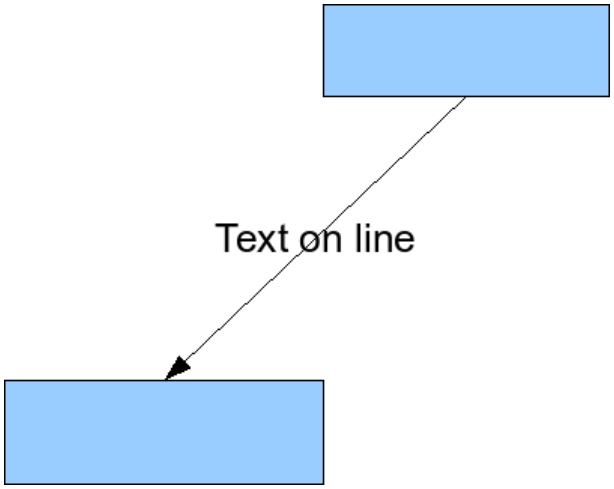


Figure 16: Adding text to an inclined line, Step 1

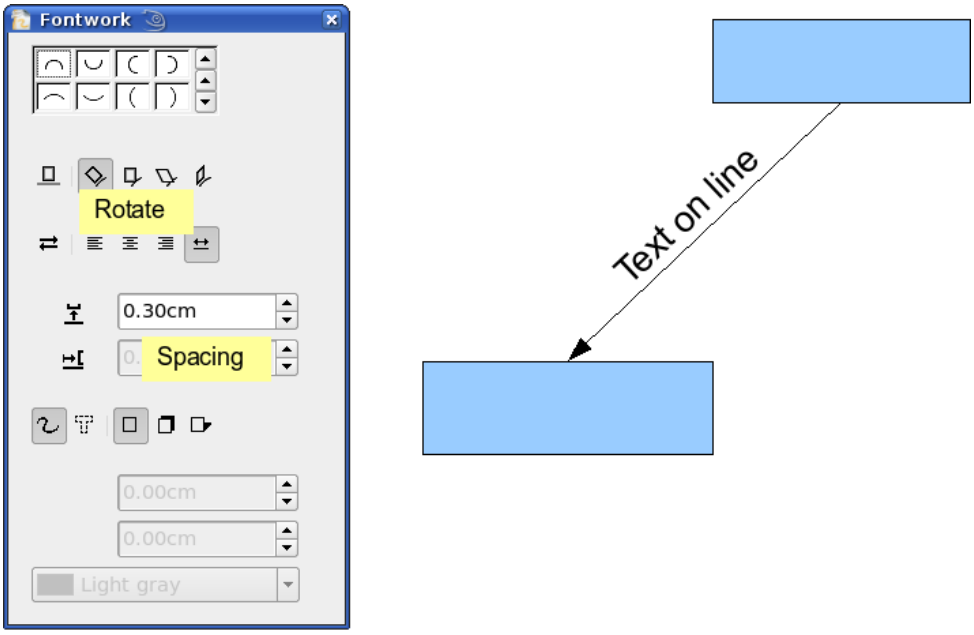


Figure 17: Adding text to an inclined line, Step 2

The Fontwork dialog opens up many other possibilities to manipulate the text. You can, for example, turn the text around 180 degrees with the Orientation icon (ss was done in the example above) or place the text under the line by assigning a negative value to the spacing between text and line.

In addition, you can use the Fontwork dialog to generate curved text that follows the shape of a curved line. It pays to experiment a little to investigate some of the possibilities.