

LibreOffice
The Document Foundation

Draw Guide

Chapter 8

Connections, Flowcharts and Organization Charts

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Contributors

Martin Fox
John A Smith

John Cleland
Peter Schofield

Jean Hollis Weber

Feedback

Please direct any comments or suggestions about this document to:
documentation@global.libreoffice.org

Acknowledgments

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Note for Mac users

Some keystrokes and menu items are different on a Mac from those used in Windows and Linux. The table below gives some common substitutions for the instructions in this chapter. For a more detailed list, see the application Help.

Windows or Linux	Mac equivalent	Effect
Tools > Options menu selection	LibreOffice > Preferences	Access setup options
<i>Right-click</i>	<i>Control+click</i> and/or <i>right-click</i> depending on system setup	Open a context menu
<i>Ctrl (Control)</i>	⌘ (<i>Command</i>)	Used with other keys
<i>F5</i>	<i>Shift+⌘+F5</i>	Open the Navigator
<i>F11</i>	⌘+T	Open the Styles and Formatting window

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Connectors and glue points

Connectors and glue points were briefly introduced in *Chapter 2 Drawing Basic Shapes*. This section describes them in more detail and how to use them.

Connectors are lines or arrows whose ends automatically dock to a connection or glue point on an object. Connectors are useful when drawing, for example, flowcharts and organization charts. The connecting lines between objects remain intact even when objects are moved or rearranged. Also, if you copy an object with a connector, the connector is also copied.

Connectors

Draw has a comprehensive selection of connectors on a **Connectors** toolbar (Figure 1) to help you connect objects in, for example, a flowchart or organization chart. To open this toolbar, click on the small triangle to the right of the Connector icon  on the Drawing toolbar. Note that this icon changes shape depending on the last connector tool used. This toolbar can become a floating toolbar by clicking on the bottom of the pop-up toolbar and dragging it into your workspace.

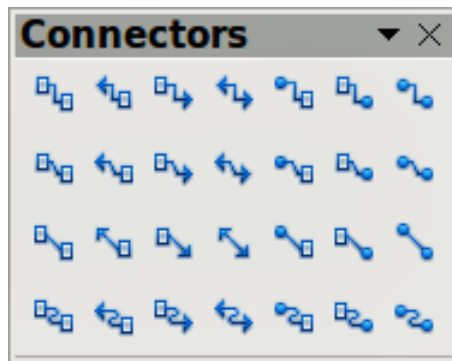


Figure 1: Connector toolbar

Types of connectors

Connectors fall into four type groups:

- *Standard connectors* – the line segments run vertically and horizontally. All angles are right angles when the connector bends around objects (Figure 2).
- *Line connectors* – consist of a line segment with two smaller segments at the ends (Figure 3).
- *Straight connectors* – consist of a single line (Figure 4).
- *Curved connectors* – are based on Bézier curves and curve around objects (Figure 5).

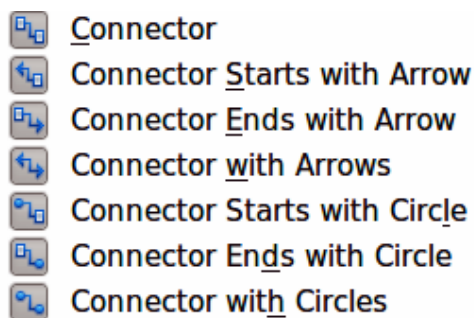


Figure 2: Standard connectors

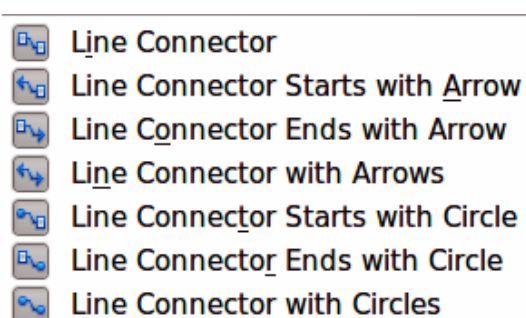


Figure 3: Line connectors

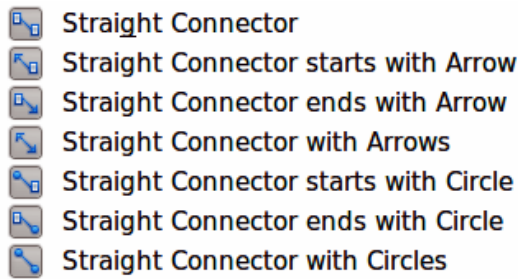


Figure 4: Straight connectors

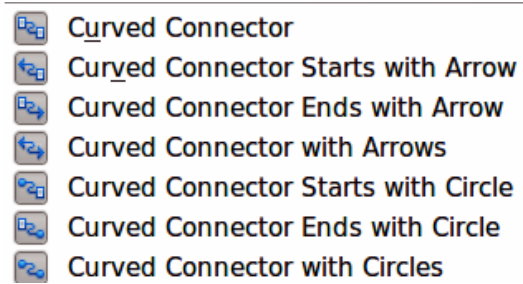


Figure 5: Curved connectors

Adding connectors

When you click a connector and move the mouse pointer over a filled object or the edge of an unfilled object, glue points appear. A glue point is a fixed point where you can attach a connector line. You can also add custom glue points to an object. See “Glue points” on page 6 for more information.

To draw a connector, select the connector type and click on a glue point on an object. Drag the cursor to a glue point on another object and then release. Draw creates the connector, avoiding any objects in its path (Figure 6).

You can also drag a connector to an empty part of your document. When you release the mouse button, the unattached end of the connector is locked into place until you drag the end to a different location.

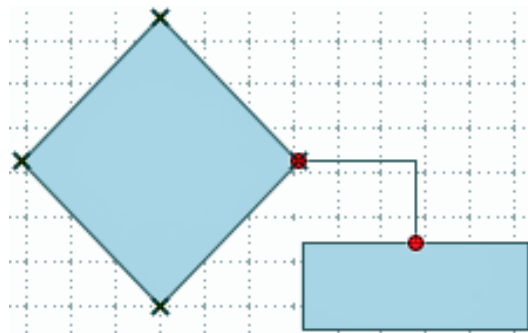


Figure 6: Connector between two objects

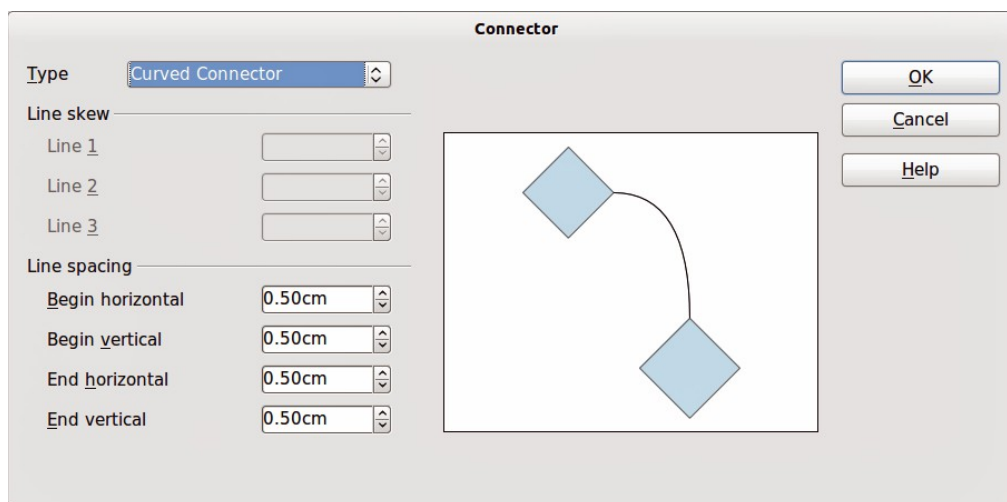


Figure 7: Connector dialog

Modifying connectors

To detach or reposition a connector, drag either end of the connector line to a different location.


To change the connector route or shape between objects, click on a control handle in the middle of a section on the connector line and drag it to a new position. Remember not to drag the connector so that it overlaps or touches any objects and creates a confusing drawing.

To modify a connector, right-click on the connector and select **Connector** from the context menu. A Connector dialog (Figure 7) opens where you can change connector type and its properties (*Line skew* and *Line spacing*). You cannot change the ends of the connector using this dialog. To change the ends, you have to draw a new connector.

Glue points

Glue points are not the same as the selection handles of an object. The handles are for moving or changing the shape of an object; see *Chapter 3 Working with Objects and Object Points* for more information. Glue points are used to fix or glue a connector to an object so that when the object moves, the connector stays fixed to the object.

All Draw objects have glue points, which normally are not displayed. Glue points only become

visible when the **Connectors** icon  on the Drawing toolbar is selected. Note that the Connectors icon changes shape depending on the last connector tool used.


To add, customize or delete glue points to an object, go to **View > Toolbars > Gluepoints** on the main menu bar to open this toolbar (Figure 8). This toolbar only becomes active after you click on the **Glue Points** icon  or select **Edit > Glue Points** on the main menu bar. Figure 6 on page 5 shows an example of active glue points.



Figure 8: Gluepoints toolbar

Types of glue points

When the **Gluepoints** toolbar opens, only the six tools on the left of the toolbar are active. The remaining six tools on the right of the toolbar only become active when the **Glue Point Relative** icon is deselected.

With reference to Figure 9, the following briefly describes the function of each tool on the **Gluepoint** toolbar.

- **Insert Glue Point** – inserts a glue point where you click in an object.
- **Exit Direction Left** – connector attaches to the left edge of the selected glue point.
- **Exit Direction Top** – connector attaches to the top edge of the selected glue point.
- **Exit Direction Right** – connector attaches to the right edge of the selected glue point.
- **Exit Direction Bottom** – connector attaches to the bottom edge of the selected glue point.
- **Glue Point Relative** – maintains the relative position of a selected glue point when you resize an object. This tool is selected by default when the **Gluepoint** toolbar opens. The following six tools only become active when this tool is deselected.
- **Glue Point Horizontal Left** – when the object is resized, the current glue point remains fixed to the left edge of the object.
- **Glue Point Horizontal Center** – when the object is resized, the current glue point remains fixed to the center of the object.

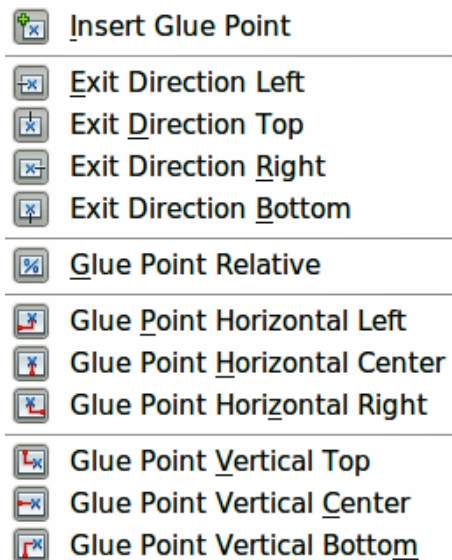


Figure 9: Glue point tools



- **Glue Point Horizontal Right** – when the object is resized, the current glue point remains fixed to the right edge of the object.
- **Glue Point Vertical Top** – when the object is resized, the current glue point remains fixed to the top edge of the object.
- **Glue Point Vertical Center** – when the object is resized, the current glue point remains fixed to the vertical center of the object.
- **Glue Point Vertical Bottom** – when the object is resized, the current glue point remains fixed to the bottom edge of the object.

Note

Each glue point you have added can have only one horizontal position and one vertical position. Only one of the horizontal position tools and one of the vertical position tools can be selected and used at any one time.

Adding glue points

By default, most objects normally have four glue points. To add extra glue points to an object or to an object that does not have glue points, proceed as follows:


- 1) Make sure no objects are selected and click on the **Glue Points** icon  or select **Edit > Glue Points** on the main menu bar. Glue points will appear as small crosses on objects (Figure 6 on page 5).
- 2) If the **Gluepoints** toolbar (Figure 8 on page 6) does not open, go to **View > Toolbars > Gluepoints** on the main menu bar.
- 3) Select the object and then the **Insert Glue Point** icon .
- 4) Move your cursor to a position where you want the glue point on an object and double-click to insert the glue point.
- 5) To move a glue point to another position, click on the glue point and drag it to its new position. Guide lines automatically appear when moving glue points.

Tip

When adding, moving or customizing glue points, it is recommended to use the zoom function to make it easier to work with glue points. See *Chapter 3 Working with Objects and Object Points* for more information.


Customizing glue points

Only glue points that have added to an object can be customized. The default glue points included with an object cannot be customized.

- 1) Make sure no objects are selected and click on the **Glue Points** icon  or select **Edit > Glue Points** on the main menu bar. Glue points will appear as small crosses on objects (Figure 6 on page 5).
- 2) If the **Gluepoints** toolbar (Figure 8 on page 6) does not open, go to **View > Toolbars > Gluepoints** on the main menu bar.
- 3) Make sure the object is not selected and double-click on a glue point that you have added to select the glue point.
- 4) Select the exit directions you want to use for connectors and double-click again on the glue point to customize the glue point.
- 5) To use horizontal and vertical positioning, click on the **Glue Point Relative** icon or right-click on the glue point and select **Adapt Position to Object** from the context menu to deselect this tool.
- 6) Select the horizontal and vertical positioning tools you want to use and double-click on the glue point to customize the glue point. Only one horizontal positioning tool and one vertical positioning tool can be used at any one time.

Deleting glue points

Only glue points that have added to an object can be deleted. The default glue points included with an object cannot be deleted.

- 1) Make sure no objects are selected and click on the **Glue Points** icon  or select **Edit > Glue Points** on the main menu bar. Glue points will appear as small crosses on objects (Figure 6 on page 5).
- 2) Make sure the object is not selected and double-click on a glue point that you have added to select the glue point.
- 3) Right-click on the glue point and select **Cut** from the context menu, or press the *Delete* key on the keyboard, or go to **Edit > Cut** on the main menu bar.

Connector text

Text can be easily added to connectors, then formatted or edited to make, for example, your flowchart or organization chart easier to follow. See *Chapter 2 Drawing Basic Shapes* and *Chapter 9 Adding and Formatting Text* for more information on working with text.

Adding text

- 1) Double-click on the connector. The 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 replaces the **Line and Filling** toolbar under the menu bar.
- 2) Use the **Text Formatting** toolbar or **Format** and **Tools** on the main menu bar to change the default format of the text.
- 3) Type the text and, when you have finished typing the text and using the text tools, move the cursor away from the objects and connector and click to end the text mode. The **Line and Filling** toolbar then replaces the **Text Formatting** toolbar.

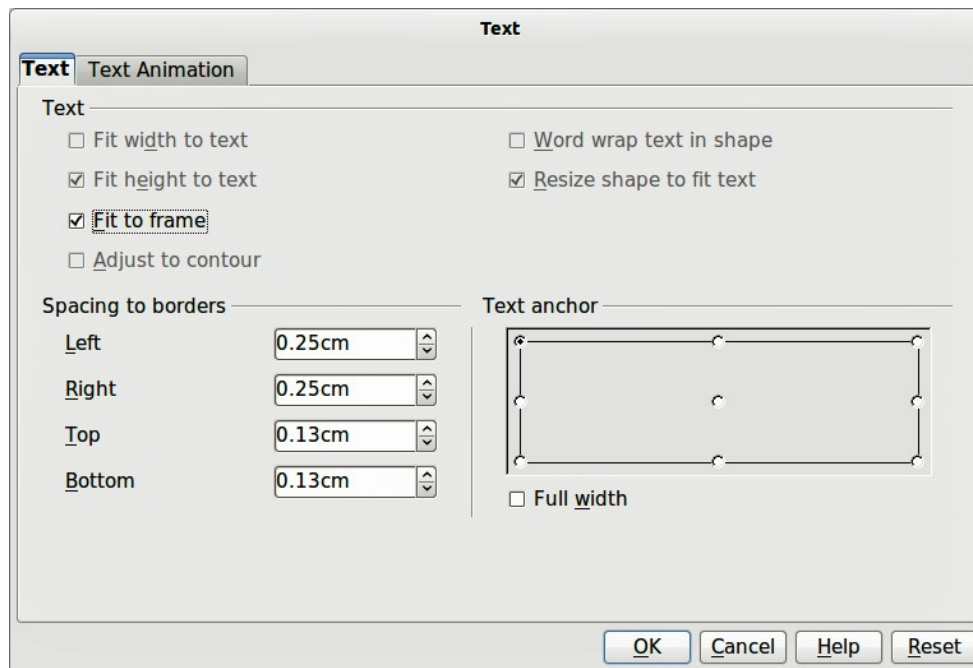


Figure 10: Text dialog

Formatting and editing text

- 1) Click on the text to enter text editing mode. The **Text Formatting** toolbar replaces the **Line and Filling** toolbar under the menu bar.
- 2) Perform any changes to the text using the text tools provided on the **Text Formatting** toolbar or **Format** and **Tools** on the main menu bar. You can also right-click on the text and select text tools from the context menu.
- 3) Right-click on the text and select **Text** from the context menu or go to **Format > Text** to open the **Text** dialog (Figure 10) where you can change the **Text anchor** and **Spacing to borders**.

Note

A connector has an invisible rectangle around it. **Text anchor** will position the text within this invisible rectangle and **Spacing to borders** will create margins between the text and the borders. These options are in addition to the standard text tools.

- 4) Click on the **Text Animation** tab where you can animate the text. However, this is not recommended unless you are going to display the drawing as part of a presentation. See the *Impress Guide* for more information on text animation.
- 5) When you have finished formatting and editing your text, move the cursor away from the objects and connector and click to end the text mode. The **Line and Filling** toolbar then replaces the **Text Formatting** toolbar.

Flowcharts

For drawing flowcharts (also known as flow diagrams), Draw has a **Flowchart** toolbar that includes a large selection of flowchart tools to help you to easily draw a flowchart. (Figure 11 and Figure 12).


Click on the small triangle to the right of the **Flowchart** icon  on the Drawing toolbar to open the **Flowchart** toolbar. Note that this icon changes shape depending on the last flowchart tool used. This toolbar can become a floating toolbar by clicking on the bottom of the pop-up toolbar and dragging it into your workspace.



Figure 11: Flowchart toolbar

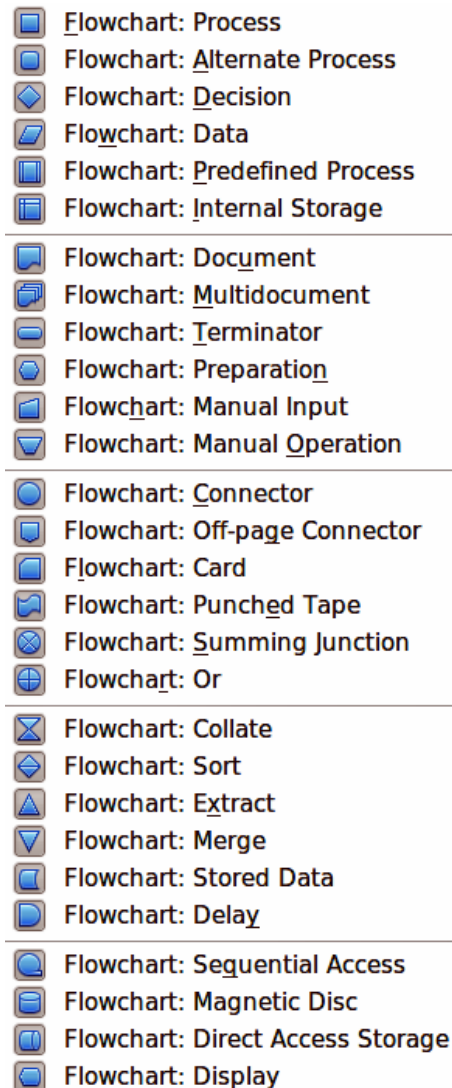


Figure 12: Flowchart tools

- 1) When adding objects to your flowchart, see *Chapter 2 Drawing Basic Shapes* for information on how to draw and resize object shapes.
- 2) Add text to each flowchart shape to make it easily identified in the flowchart. See *Chapter 2 Drawing Basic Shapes* and *Chapter 9 Advanced Draw Techniques* for more information.
- 3) Use connections lines in your flowchart. This allows repositioning of an object in your chart while maintaining connections with the other objects in the chart. See “Connectors and glue points” on page 4 for more information.
- 4) Use the zoom, grid and snap functions to help in positioning objects in your flowchart. See *Chapter 3 Working with Objects and Object Points* for more information.

- 5) Use the alignment and distribution functions to give your flowchart a more professional look. See *Chapter 5 Combining Multiple Objects* for more information.
- 6) Duplicate objects when you require more than one of the same shape and size. See *Chapter 5 Combining Multiple Objects* for more information.

Organization charts

Draw does not have a toolbar for organization charts, but these charts are easily created using basic shapes, flowchart shapes, connection points and connector lines. Hierarchy in an organization is easily indicated using shading and/or color. When using shading and color in an organization chart, make sure that your choices provide a good contrast between the text and the shading or color to make the chart easy to read on a computer display or in a printed document.

An example of an organization chart is shown in Figure 13. This was drawn using the process shape from the **Flowchart** toolbar and connection lines.

- 1) When adding objects to your chart, see *Chapter 2 Drawing Basic Shapes* for information on how to draw and resize object shapes.
- 2) Add text to each object in the organization chart to make it easily identified in the chart. See *Chapter 2 Drawing Basic Shapes* and *Chapter 9 Adding and Formatting Text* for more information.
- 3) Use connections lines in your organization chart. This allows repositioning of an object in your chart while maintaining connections with the other objects in the chart. See “Connectors and glue points” on page 4 for more information.
- 4) Use the zoom, grid and snap functions to help in positioning objects in your chart. See *Chapter 3 Working with Objects and Object Points* for more information.
- 5) Use the alignment and distribution functions to give your organization chart a more professional look. See *Chapter 5 Combining Multiple Objects* for more information.
- 6) Duplicate objects when you require more than one of the same shape and size. See *Chapter 5 Combining Multiple Objects* for more information.

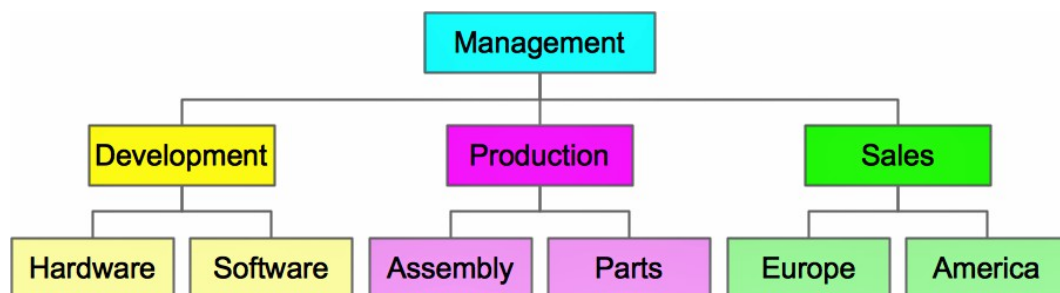


Figure 13: Example organization chart