



Draw Guide

Chapter 8 *Connections, Flowcharts, and* *Organization Charts*

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Using LibreOffice on macOS

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

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

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Introduction

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 and glue points

Connectors

Draw has a comprehensive selection of connectors to help you connect objects in, for example, a flowchart or organization chart. The default set of connectors can be accessed using one of the following methods:

- Click the small triangle to the right of the **Connector** icon on the **Drawing** toolbar (highlighted in Figure 1). The icon changes shape depending on the last connector used.
- Select a connector from **Shapes > Default > Connectors** on the Sidebar (Figure 2).

The connectors on the **Drawing** toolbar (Figure 1) can be displayed as a floating toolbar as follows:

- 1) Click on the small triangle on the right of the **Connector** icon on the **Drawing** toolbar.
- 2) Click at the top of the pop up toolbar and drag it on to the Workspace.
- 3) Release the mouse button and the pop up toolbar becomes a floating toolbar (Figure 3).



Figure 1: Drawing toolbar

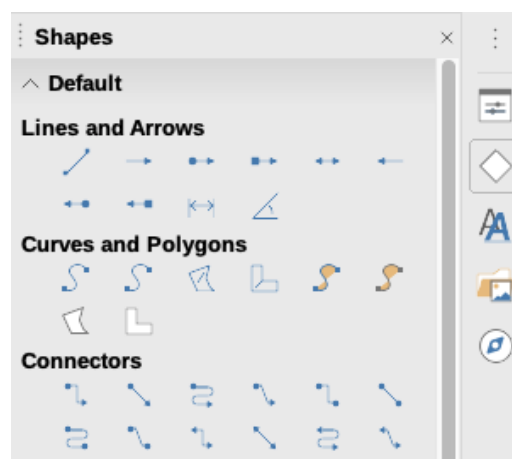


Figure 2: Connectors section in Shapes deck on Sidebar



Figure 3: Connectors toolbar

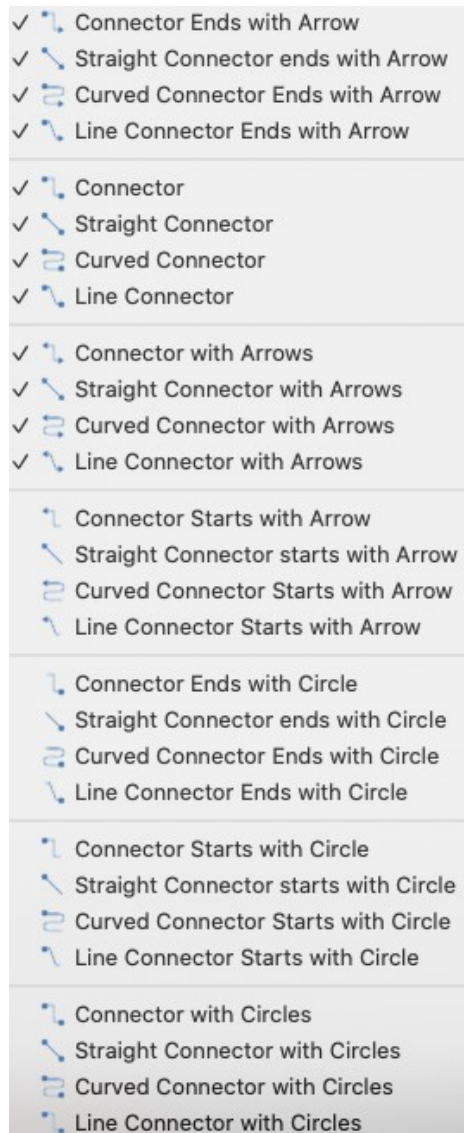


Figure 4: Connectors toolbar - Visible Buttons

Connector types

The full range of predefined connectors can be accessed by clicking on the small downward facing triangle on the **Connectors** toolbar and selecting **Visible Buttons** (Figure 4). The connectors available on the toolbar are indicated by a check mark against the name.

Connectors fall into four type groups:

- **Standard connectors** – connector name starts with *Connector*. Line segments run vertically and horizontally. Draws a connector with one or more 90-degree angle bends. Click on an object glue point on an object, drag to a glue point on another object, then release.

- **Line connectors** – connector name starts with *Line*. Consists of a line segment with two smaller segments at the ends and draws a connector that bends near a glue point. Click on an object glue point, drag to a glue point on another object, then release. To adjust the length of the line segment between a bend point and a glue point, click the connector and drag the bend point.
- **Straight connectors** – connector name starts with *Straight*. Consists of a single line and draws a straight line connector. Click on an object glue point, drag to a glue point on another object, then release.
- **Curved connectors** – connector name starts with *Curved*. Based on Bézier curves and curve around objects. Draws a curved line connector. Click on an object glue point, drag to a glue point on another object, then release.

Adding connectors

When you select 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 7 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. Figure 5 shows a standard connector drawn between two objects. Remember not to drag the connector so that it overlaps or touches any objects and creates a confusing drawing. If this does happen, see “*Modifying connectors*” below on how to change the connector route to avoid any objects the connector crosses over.

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.

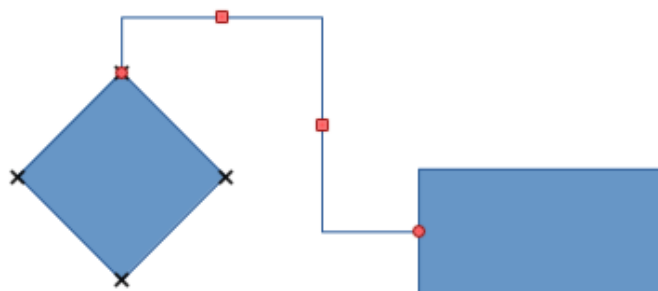


Figure 5: Connector between two objects

Modifying connectors

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

To change the connector route between objects avoiding any objects on the route, click on a control point on the connector line and drag it to a new position. In Figure 5, the control points are shown as small red squares.

To modify a connector, right-click on the connector and select **Connector** from the context menu to open the **Connector** dialog (Figure 6). Use this dialog to change connector type and its properties.

- **Line skew** – defines the skew of the line and the dialog preview displays the result.
- **Line spacing** – sets the spacing for the connectors.
 - *Begin horizontal* – enter the amount of horizontal space you want at the beginning of the connector.

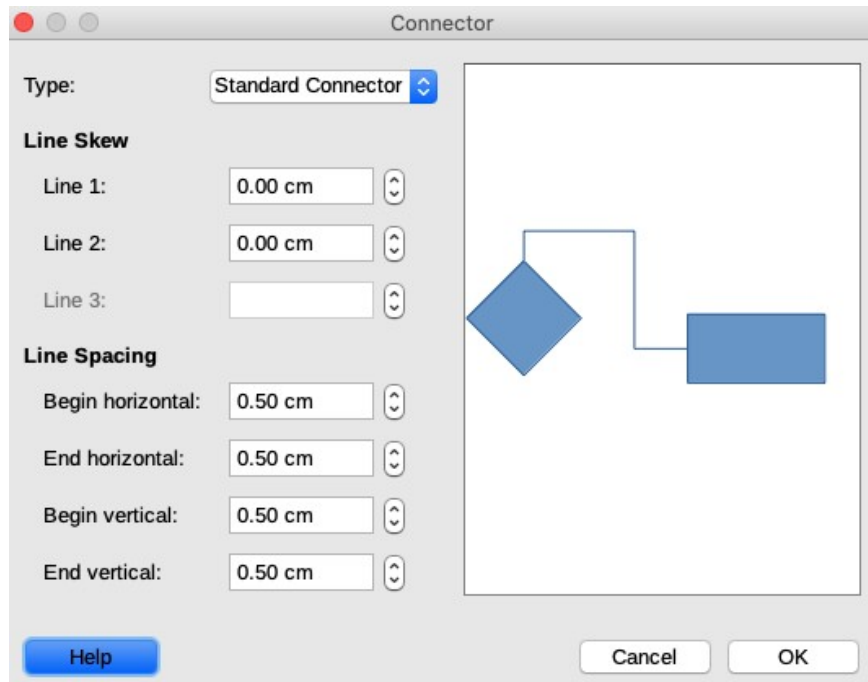


Figure 6: Connector dialog

- *Begin vertical* – enter the amount of vertical space you want at the beginning of the connector.
- *End horizontal* – enter the amount of horizontal space you want at the end of the connector.
- *End vertical* – enter the amount of vertical space you want at the end of the connector
- **Preview window** – a left click zooms in on the preview and a right click zooms out..



Note

You cannot swap the ends of the connector using the **Connector** dialog, that is start point becomes the end point and the end point becomes the start point. To swap the ends of a connector, you have to draw a new connector in the opposite direction.

Glue points

Glue points are not the same as the selection handles of an object. The selection 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 that object.

All Draw objects have glue points, which normally are not displayed and only become visible when the **Connectors** icon on the **Drawing** toolbar (Figure 1 on page 4) 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 > Glue Points** on the main menu bar to activate the **Glue Points** toolbar (Figure 7). This toolbar only becomes visible after using one of the following methods:

- Click on the **Show Glue Point Functions** icon on the **Standard** or **Drawing** toolbars.
- Select **Edit > Glue Points** on the main menu bar.

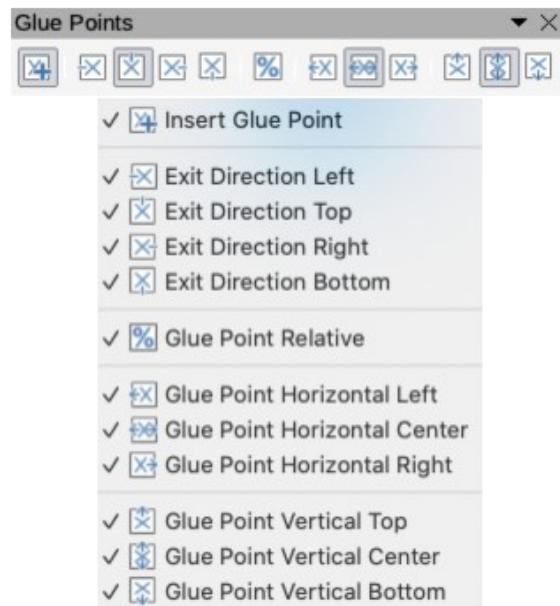


Figure 7: Glue Points toolbar and Visible Buttons



Note

The **Show Glue Point Functions** icon on the **Drawing** toolbar is not part of the default set of tools for the **Drawing** toolbar. To add this icon, right click in an empty on the **Drawing** toolbar and select **Visible Buttons > Glue Points** from the context menu.

Glue point types

When the **Glue Points** toolbar (Figure 7) 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.

The following briefly describes the function of each tool on the **Glue Points** toolbar (Figure 7).

- **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 **Glue Point** toolbar opens.

The following six tools only become active when the **Glue Point Relative** tool is deselected.

- **Glue Point Horizontal Left** – when the object is resized, the current glue point remains fixed at the left edge of the object.
- **Glue Point Horizontal Center** – when the object is resized, the current glue point remains fixed at the center of the object.
- **Glue Point Horizontal Right** – when the object is resized, the current glue point remains fixed at the right edge of the object.
- **Glue Point Vertical Top** – when the object is resized, the current glue point remains fixed at the top edge of the object.

- **Glue Point Vertical Center** – when the object is resized, the current glue point remains fixed at the vertical center of the object.
- **Glue Point Vertical Bottom** – when the object is resized, the current glue point remains fixed at 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. Add additional glue points to an object as follows:

- 1) Make sure no objects are selected and use one of the following methods to open the **Glue Points** toolbar:
 - Click on the **Show Glue Point Functions** icon on the **Standard** or **Drawing** toolbars.
 - Select **Edit > Glue Points** on the main menu bar.
- 2) If the **Glue Points** toolbar does not open, go to **View > Toolbars > Glue Points** on the main menu bar.
- 3) Select the object and then the **Insert Glue Point** icon, or right click on a glue point you have previously inserted and select **Insert Glue Point** from the context menu.
- 4) Move your cursor to a position where you want the glue point on an object and 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.



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. Also, glue points snap to the grid making it easier to position a glue point.

Customizing glue points

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

Customize the exit direction for the added glue point as follow:

- 1) Make sure no objects are selected and use one of the following methods to activate glue points that have been added to an object:
 - Click on the **Show Glue Point Functions** icon on the **Standard** or **Drawing** toolbars.
 - Select **Edit > Glue Points** on the main menu bar
- 2) If the **Glue Points** toolbar does not open, go to **View > Toolbars > Glue Points** on the main menu bar.
- 3) Double-click on a glue point that you have added to select the glue point for customization.

- 4) Select an exit direction you want to use for the connector you will be attaching to the glue point from the **Glue Points** toolbar (Figure 7 on page 8), or right click on the glue point and select the exit direction from the context menu.

Customize the horizontal and vertical positioning for the added glue point as follow:

- 1) Make sure no objects are selected and use one of the following methods to activate glue points that have been added to an object:
 - Click on the **Show Glue Point Functions** icon on the **Standard** or **Drawing** toolbars.
 - Select **Edit > Glue Points** on the main menu bar
- 2) If the **Glue Points** toolbar does not open, go to **View > Toolbars > Glue Points** on the main menu bar.
- 3) Double-click on a glue point that you have added to select the glue point for customization.
- 4) Click on the **Glue Point Relative** icon on the **Glue Points** toolbar (Figure 7 on page 8) to deselect this tool, or right-click on the glue point and deselect **Glue Point Relative** from the context menu.
- 5) Select the horizontal and vertical positioning tools you want to use for 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 been added to an object can be deleted. The default glue points included with an object cannot be deleted.

- 1) Select the glue point you have previously added and now want to delete.
- 2) Press the *Delete* key 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.



Figure 8: Text Formatting toolbar

Adding text

- 1) Select the connector and the control points become active.
- 2) Click on the **Text** icon or **Text Vertical** icon (if active) on the **Standard** toolbar. A flashing text cursor appears close to the connector and the **Text Formatting** toolbar (Figure 8) opens.
- 3) If necessary, use the tools available on the **Text Formatting** toolbar or go to **Format > Text** on the main menu bar to change the text format.
- 4) Type the text and, when you have finished typing your text, move the cursor away from the text and connector and click to end the text mode. This also closes the **Text Formatting** toolbar.

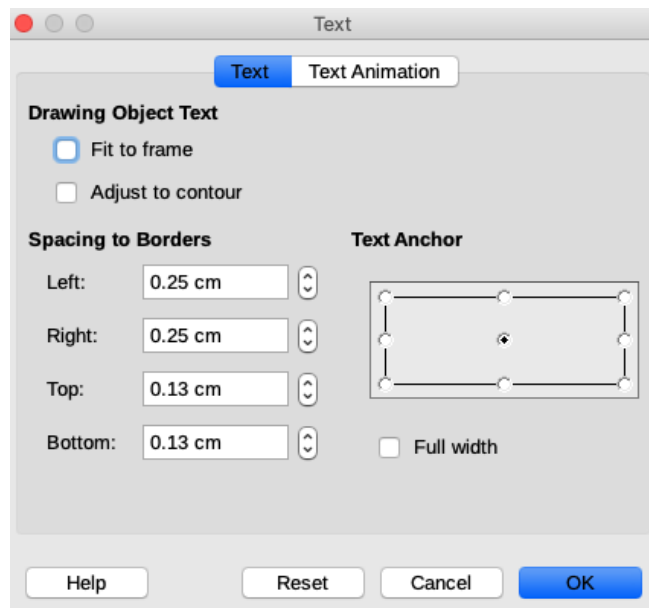


Figure 9: Text dialog – Text page

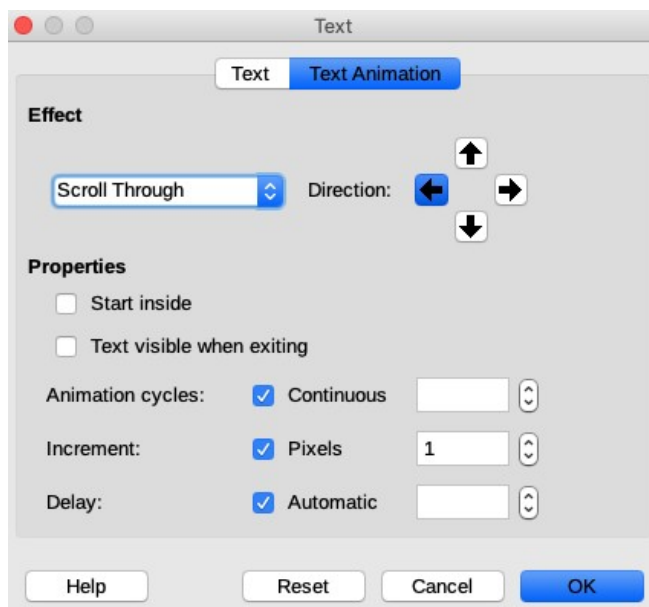


Figure 10: Text dialog – Text Animation page

Formatting and editing text

- 1) Select the connector and the control points become active.
- 2) Click on the **Text** icon or **Text Vertical** icon (if active) on the **Standard** toolbar and the **Text Formatting** toolbar (Figure 8) opens.
- 3) Use the tools available on the **Text Formatting** toolbar or go to **Format > Text** on the main menu bar to change the text format.
- 4) Right-click on the connector text and select **Text** from the context menu to open the **Text** dialog (Figure 9) allowing you to change how the text appears next to the connector:
 - **Drawing Object Text** – allows you to fit the text to the connector rectangle (frame) or allow the text to follow the contour of the connector.
 - **Spacing to Borders** – creates margins around the text within the connector rectangle.
 - **Text Anchor** – positions the text within the connector rectangle.

- 5) If required, click on the **Text Animation** tab (Figure 10) where you can select options to 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.
- 6) When you have finished editing the text, move the cursor away from text and connector and click to end the text mode. This also closes the **Text Formatting** toolbar.

Flowcharts

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

- 1) Click on the small triangle to the right of the **Flowchart** icon on the **Drawing** toolbar to open the **Flowchart** pop up menu. Note that this icon changes shape depending on the last flowchart tool used.
- 2) Click at the top of the **Flowchart** menu and drag it into your workspace.
- 3) Release the mouse button and the **Flowchart** menu becomes a floating **Flowchart** toolbar.

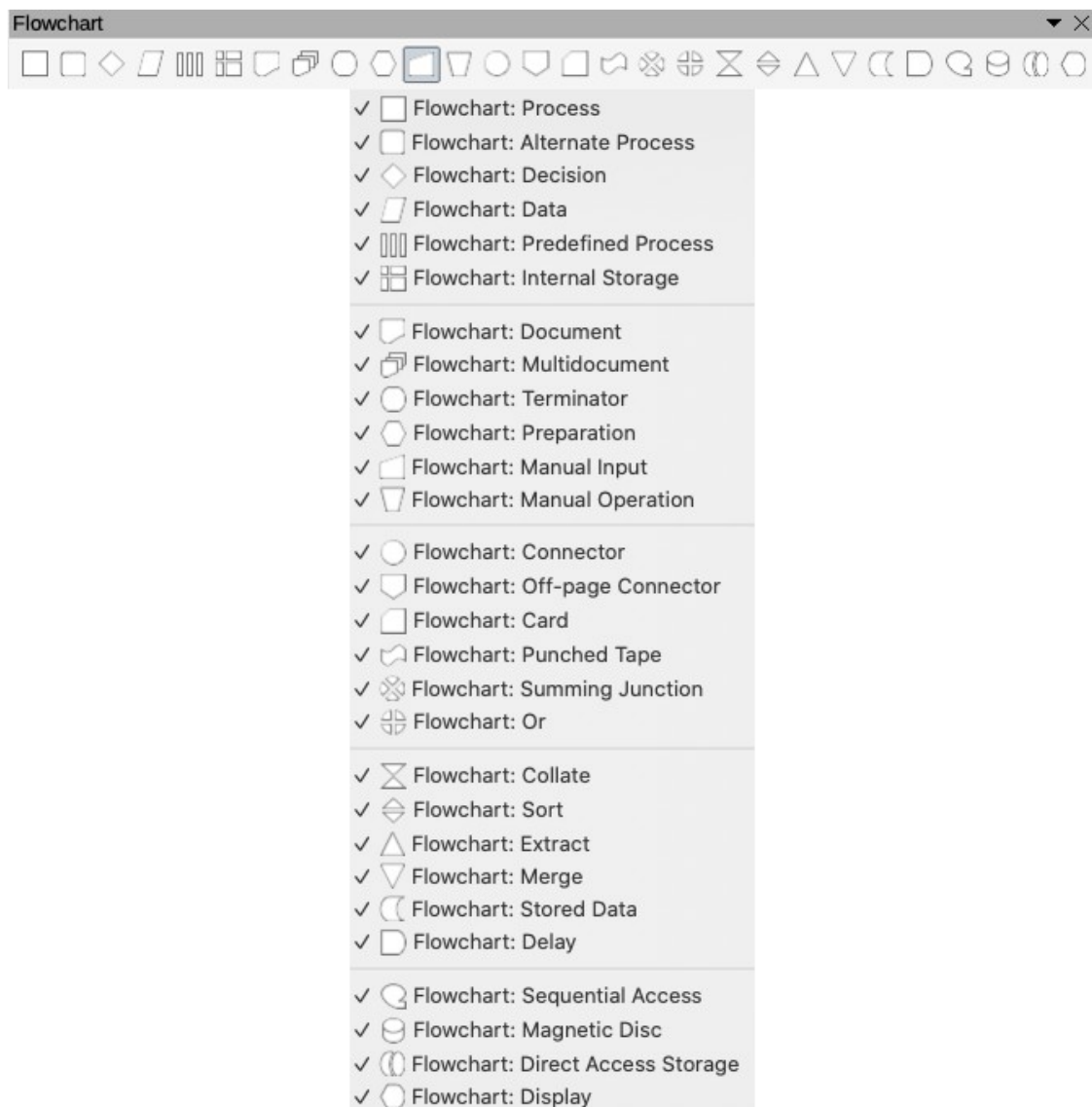


Figure 11: Flowchart toolbar and Visible Buttons

Recommended basic steps to follow when creating a flowchart:

- 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 11 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 selection provides 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.

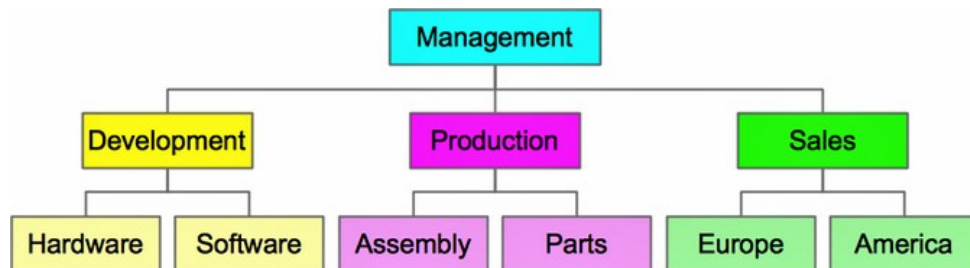


Figure 12: Example organization chart

An example of an organization chart is shown in Figure 12. 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 11 Advanced Draw Techniques* 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.