



Adobe Flash CS 6

Level 3

Topics:

- Symbols
- Buttons
- Actionscript
- Patterns

About Symbols

A symbol is a graphic, button, or movie clip that you create once in the Flash Professional authoring environment or by using the SimpleButton (AS 3.0) and MovieClip classes. You can then reuse the symbol throughout your document or in other documents.

A symbol can include artwork that you import from another application. Any symbol that you create automatically becomes part of the library for the current document.

An instance is a copy of a symbol located on the Stage or nested inside another symbol. An instance can be different from its parent symbol in color, size, and function. Editing the symbol updates all of its instances, but applying effects to an instance of a symbol updates only that instance.

Using symbols in your documents dramatically reduces file size; saving several instances of a symbol requires less storage space than saving multiple copies of the contents of the symbol. For example, you can reduce the file size of your documents by converting static graphics, such as background images, into symbols and then reusing them. Using symbols can also speed SWF file playback, because a symbol needs to be downloaded to Flash® Player only once.

Share symbols among documents as shared library assets during authoring or at runtime. For runtime shared assets, you can link assets in a source document to any number of destination documents, without importing the assets into the destination document. For assets shared during authoring, you can update or replace a symbol with any other symbol available on your local network.

If you import library assets with the same name as assets already in the library, you can resolve naming conflicts without accidentally overwriting existing assets.

Types of symbols

Each symbol has a unique Timeline and Stage, complete with layers. You can add frames, keyframes, and layers to a symbol Timeline, just as you can to the main Timeline. When you create a symbol you choose the symbol type.

Use graphic symbols for static images and to create reusable pieces of animation that are tied to the main Timeline. Graphic symbols operate in sync with the main Timeline. Interactive controls and sounds won't work in a graphic symbol's animation sequence. Graphic symbols add less to the FLA file size than buttons or movie clips because they have no timeline.

Use button symbols to create interactive buttons that respond to mouse clicks, rollovers, or other actions. You define the graphics associated with various button states, and then assign actions to a button instance. For more information, see *Handling events in Learning ActionScript 2.0 in Adobe Flash* or *Handling events in the ActionScript 3.0 Developer's Guide*.

Use movie clip symbols to create reusable pieces of animation. Movie clips have their own multiframe Timeline that is independent from the main Timeline—think of them as nested inside a main Timeline that can contain interactive controls, sounds, and even other movie clip instances. You can also place movie clip instances inside the Timeline of a button symbol to create animated buttons. In addition, movie clips are scriptable with ActionScript®.

Use font symbols to export a font and use it in other Flash Professional documents.

Flash Professional provides built-in components, movie clips with defined parameters, that you can use to add user interface elements, such as buttons, checkboxes, or scroll bars, to your documents. For more information, see *About Components in Using ActionScript 2.0 Components*, or *About ActionScript 3.0 Components in Using ActionScript 3.0 Components*.

Note: To preview animation in component instances and scaling of 9-slice-scaled movie clips in the Flash Professional authoring environment, select **Control > Enable Live Preview**.

Create symbols

You can create a symbol from selected objects on the Stage, create an empty symbol and make or import the content in symbol-editing mode, and create font symbols in Flash Professional. Symbols can contain all the functionality that Flash Professional can create, including animation.

Using symbols that contain animation lets you create Flash Professional applications with a lot of movement while minimizing file size. Consider creating animation in a symbol that has a repetitive or cyclic action—the up-and-down motion of a bird's wings, for example.

To add symbols to your document, use shared library assets during authoring or at runtime.

Convert selected elements to a symbol

Select an element or several elements on the Stage. Do one of the following:

Select **Modify > Convert To Symbol**.

Drag the selection to the Library panel.

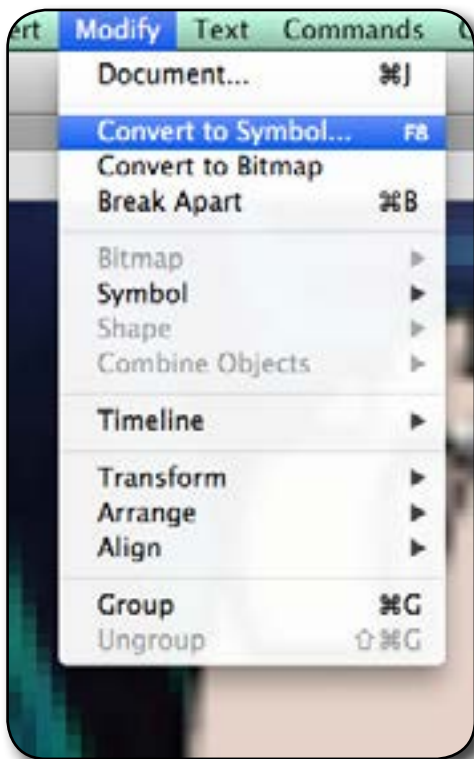
Right-click (Windows) or Control-click (Macintosh) and select **Convert To Symbol** from the context menu.

In the **Convert To Symbol** dialog box, type the name of the symbol and select the behavior.

Click in the registration grid to position the registration point for the symbol.

Click **OK**.

Flash Professional adds the symbol to the library. The selection on the Stage becomes an instance of the symbol. Once you have created a symbol, you can edit it in symbol edit mode by choosing **Edit > Edit Symbols**, or you can edit it in the context of the Stage by choosing **Edit > Edit In Place**. You can also change the registration point of a symbol.



Create an empty symbol

Do one of the following:

- Select Insert > New Symbol.
- Click the New Symbol button at the lower left of the Library panel.
- Select New Symbol from the Library Panel menu in the upper-right corner of the Library panel.
- In the Create New Symbol dialog box, type the name of the symbol and select the behavior.
- Click OK.

Flash Professional adds the symbol to the library and switches to symbol-editing mode. In symbol-editing mode, the name of the symbol appears above the upper-left corner of the Stage, and a cross hair indicates the symbol's registration point.

To create the symbol content, use the Timeline, draw with the drawing tools, import media, or create instances of other symbols. To return to document-editing mode, do one of the following:

- Click the Back button.
- Select Edit > Edit Document.
- Click the scene name in the Edit bar.

When you create a symbol, the registration point is placed at the center of the window in symbol-editing mode. You can place the symbol contents in the window in relation to the registration point. To change the registration point, when you edit a symbol, move the symbol contents in relation to the registration point.

In the ActionScript Linkage section, you can choose to export for ActionScript by selecting the Export for ActionScript checkbox. The Class and Base Class are automatically displayed (you can choose to rename the class names). Flash Pro searches for class definitions in an external AS file or a linked SWC file. If the class definitions are not found in these locations, Flash Pro automatically generates class files.

(Flash Professional CC only) Swapping multiple symbols

The Swap Symbol option allows you to swap symbols with a selected symbol or bitmaps.

In Flash Pro CC, select multiple symbols on the stage.

On the Properties panel, click SWAP.

On the Swap Symbol dialog, select the symbol you want to replace all selected symbols/bitmaps with.

Click OK.

To return to document-editing mode, do one of the following:
Click the Back button.

Select Edit > Edit Document.

Click the scene name in the Edit bar above the Stage.

Duplicate symbols

Duplicating a symbol lets you use an existing symbol as a starting point for creating a symbol.

To create versions of the symbol with different appearances, also use instances.

Duplicate a symbol using the Library panel

Select a symbol in the Library panel and do one of the following:
Right-click (Windows) or Control-click (Macintosh), and select Duplicate from the context menu.

Select Duplicate from the Library Panel menu.

Duplicate a symbol by selecting an instance

Select an instance of the symbol on the Stage.

Select Modify > Symbol > Duplicate Symbol.

The symbol is duplicated, and the instance is replaced with an instance of the duplicate symbol.

Convert animation on the Stage into a movie clip symbol

To reuse an animated sequence on the Stage, or to manipulate it as an instance, select it and save it as a movie clip symbol.

On the main Timeline, select every frame in every layer of the animation on the Stage that you want to use. For information on selecting frames, see Insert frames in the Timeline.

Do one of the following to copy the frames:

Right-click (Windows) or Control-click (Macintosh) any selected frame, and select Copy Frames from the context menu. To delete the sequence after converting it to a movie clip, select Cut.

Select Edit > Timeline > Copy Frames. To delete the sequence after converting it to a movie clip, select Cut Frames.

Deselect your selection and make sure nothing on the Stage is selected. Select Insert > New Symbol.

Name the symbol. For Type, select Movie Clip, then click OK.

On the Timeline, click Frame 1 on Layer 1, and select Edit > Timeline > Paste Frames.

This action pastes the frames (and any layers and layer names) you copied from the main Timeline to the Timeline of this movie clip symbol. Any animation, buttons, or interactivity from the frames you copied now becomes an independent animation (a movie clip symbol) that you can reuse.

Edit a symbol in place

Do one of the following:

Double-click an instance of the symbol on the Stage.

Select an instance of the symbol on the Stage and right-click (Windows) or Control-click (Macintosh), and select Edit in Place.

Select an instance of the symbol on the Stage, and select Edit > Edit In Place.

Edit the symbol.

To exit edit-in-place mode and return to document-editing mode, do one of the following:

Click the Back button.

Select the current scene name from the Scene menu in the Edit bar.

Select Edit > Edit Document.

Double-click outside the symbol content.

Edit a symbol in a new window

Select an instance of the symbol on the Stage and right-click (Windows) or Control-click (Macintosh), and select Edit In New Window.

Edit the symbol.

Click the Close box in the upper-right corner (Windows) or upper-left corner (Macintosh) to close the new window, and click in the main document window to return to editing the main document.

Edit a symbol in symbol-editing mode
Do one of the following to select the symbol:

Double-click the symbol's icon in the Library panel.

Edit Symbols

When you edit a symbol, Flash Professional updates all the instances of that symbol in your document. Edit the symbol in the following ways:

- In context with the other objects on the Stage by using the Edit In Place command. Other objects are dimmed to distinguish them from the symbol you are editing. The name of the symbol you are editing appears in an Edit bar at the top of the Stage, to the right of the current scene name.
- In a separate window, using the Edit In New Window command. Editing a symbol in a separate window lets you see the symbol and the main Timeline at the same time. The name of the symbol you are editing appears in the Edit bar at the top of the Stage.

You edit the symbol by changing the window from the Stage view to a view of only the symbol, using symbol-editing mode. The name of the symbol you are editing appears in the Edit bar at the top of the Stage, to the right of the current scene name.

When you edit a symbol, Flash Professional updates all instances of the symbol throughout the document to reflect your edits. While editing a symbol, use any of the drawing tools, import media, or create instances of other symbols.

- Change the registration point of a symbol (the point identified by the coordinates 0, 0) by using any symbol-editing method.

Edit the symbol.

To exit symbol-editing mode and return to editing the document, do one of the following:

Click the Back button at the left of the Edit bar at the top of the Stage.

Select Edit > Edit Document.

Click the scene name in the Edit bar at the top of the Stage.

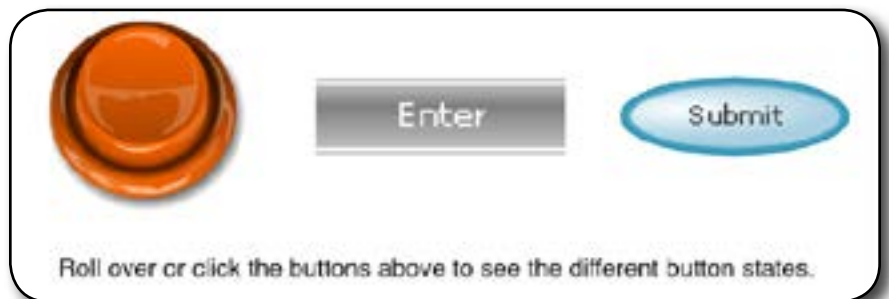
Double-click outside the symbol content.

Buttons

There are three types of symbols in Adobe Flash Professional: buttons, graphics, and movie clips. Button symbols enable you to add interactivity to your projects, including rollover and disjointed rollover effects, in addition to triggering functions. There are two parts of a button's behavior: the first is how the button itself behaves visually when rolled over or clicked; the second is what happens in the Flash file when the button is clicked.

Most buttons are designed with different Up, Down, and Over states. These states allow the button to look different when the user hovers the cursor over the button and when user clicks the button.

Buttons in Flash always require ActionScript to cause mouse events (such as mouseover or onclick) to trigger actions and run functions. In order to hook up buttons to the corresponding ActionScript, you must assign an instance name to button instances on the Stage using the Property inspector.



There are several different ways of creating buttons. Choose from the following:

- Button symbols
- Movie Clip symbols
- ActionScript 3 Button components
- ActionScript 2 Button components

Define your button states.

Up frame

The appearance of the button when the user is not interacting with it.

Over frame

The appearance of the button as the user is about to select it.

Down frame

The appearance of the button as the user selects it.

Hit frame

The area that is responsive to clicks by the user. Defining this Hit frame is optional. If your button is small, or if its graphic area is not contiguous, defining this frame can be useful.

The contents of the Hit frame are not visible on the Stage during playback.

The graphic for the Hit frame is a solid area large enough to encompass all graphic elements of the Up, Down, and Over frames.

If you don't specify a Hit frame, the image for the Up state is used.

You can make a button that responds when a different area of the stage is clicked or rolled over (also called a disjoint rollover). Place the Hit frame graphic in a different location than the other button frame graphics.

Note:

ActionScript 2.0 is not compatible with ActionScript 3.0. If your version of Flash uses ActionScript 3.0, you can't paste ActionScript 2.0 code into your button (and vice versa). Before you paste ActionScript from another source into your buttons, verify that the version is compatible.

Basic steps for creating buttons

Decide what button type best suits your needs.

Button symbol

Most people choose button symbols for their flexibility. Button symbols contain a specialized internal timeline for button states. You can easily create visually different Up, Down, and Over states. Button symbols also change their state automatically as they react to user actions.

Movie clip button

You can use a movie clip symbol to create sophisticated button effects. Movie clip symbols can contain almost any type of content, including animation. However, movie clip symbols do not have built-in Up, Down, and Over states. You create those states yourself, using ActionScript. A disadvantage is that movie clip files are larger than button files.

ActionScript button component

Use a button component if you require only a standard button or a toggle, and you don't want to customize it extensively. Both ActionScript 2.0 and 3.0 button components come with built-in code that enables state changes. So, you don't have to define the look and behavior of button states. Simply drag the component onto the Stage.

ActionScript 3.0 button components allow for some customization. You can bind the button to other components, and share and display application data. They have built-in features, such as accessibility support. Button, RadioButton, and CheckBox components are available. For details, see [Use the Button component in Using Adobe ActionScript 3.0 Components](#).

ActionScript 2.0 button components are not customizable. The component enables state changes.

Associate an action with the button.

To make something happen when the user selects a button, you add ActionScript code to the Timeline. Place the ActionScript code in the same frames as the buttons. The Code Snippets panel has pre-written ActionScript 3.0 code for many common button uses.

Note: Most things that you can do in Flash can be done with or without ActionScript. The things that actually require ActionScript are nonlinear playback and any situation where you choose to avoid using the Timeline.

Adobe ActionScript

is the scripting language used in Adobe Flash Professional to control playback of SWFs at runtime in Adobe Flash Player. Use ActionScript to make your applications play dynamically in a nonlinear way, and to add interesting or complicated functionality that cannot be added using the Timeline.

Using ActionScript, you can add complex interactivity, playback control, and data display to your application. You can add ActionScript in the authoring environment by typing code into the Script pane of the Actions panel. ActionScript follows its own rules of syntax, uses reserved keywords, and supports variables (used to store and retrieve information). ActionScript includes a large library of built-in classes that you can use to create objects that perform many useful tasks, such as generating random numbers.

When you create a new FLA document, you must choose which version of ActionScript to use. You can change this setting if you decide later to write your scripts using a different version of ActionScript by updating the publish settings.

Flash supports several versions of ActionScript to meet the needs of different kinds of developers and playback hardware:

ActionScript 3 (the most recent version) executes extremely fast and is fully compliant with the ECMAScript specification. It offers better XML processing, an improved event model, and an improved architecture for working with onscreen elements. FLA files that use ActionScript 3 cannot include earlier versions of ActionScript.

ActionScript 2 is older and simpler to learn than ActionScript 3. Although Flash Player runs compiled ActionScript 2 code slower than compiled ActionScript 3 code, ActionScript 2 is still useful for many kinds of projects that are not computationally intensive—such as design-oriented content.

ActionScript 1 is the simplest form of ActionScript, and is still used by some versions of the Flash Lite player. ActionScript 1 and 2 can coexist in the same FLA file.

Flash Lite 2 and **Flash Lite 1** are subsets of the corresponding version of ActionScript that are supported on some older mobile phones and devices.

ActionScript example



```
1 btn_launch.addEventListener(MouseEvent.CLICK, thrusters);
2
3 function thrusters(event:MouseEvent):void
4 {
5     gotoAndStop(engage);
6 }
7
```

Different features and file formats may require setting the corresponding version of ActionScript in the publish profile in order to function and render properly.

Patterns

Like gradients, patterns can be used to add interest to otherwise flat graphic shapes. Adobe Flash Professional CS5 provides a handful of options for creating patterns, including the new enhancements to the Deco tool.

A tile is a bitmap, symbol, or shape applied as a repeating graphic element to form a pattern effect. You can think of repeating graphics like tiles on a floor forming a pattern in a room. In Flash Professional, you can apply bitmaps as tiled fills using the Color panel. You can also apply movie clip symbols as tiled patterns using the Spray Brush and Deco tools.

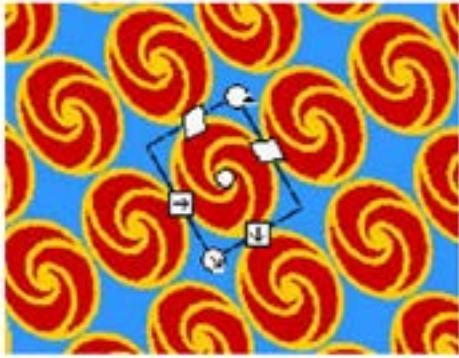
Bitmap fills

Bitmaps can be used to fill shapes with repeating patterns. You can use the Color panel or the Graphics object in ActionScript to draw bitmaps inside the fills and strokes in your drawing objects. The bitmaps are applied to the shape as a repeating pattern which can be manipulated with the Gradient Transform tool to create a geometric grid pattern.

To create a shape containing a bitmap fill:

1. Create a bitmap graphic in Adobe Fireworks or a similar graphics editing program.
2. Size the graphic to approximately 120 pixels (or less) in width and height.
3. Save the file in the PNG, JPEG, or GIF format.
4. Create a new FLA file in Flash named `bitmapfill fla`.
5. Draw a shape on the Stage using the Rectangle tool (R) or another shape tool.
6. Select the shape and open the Color panel (Window > Color).
7. Make sure the fill color swatch is selected in the Color panel and change the fill option from Solid color to Bitmap fill
8. Click the Import button in the Bitmap fill options and import your bitmap. Notice that the bitmap is imported to the Library panel and displayed in a grid inside the fill area of your shape.
9. Select the Gradient Transform tool (F) and then click on one of the tiles in the pattern. Notice that transformation handles appear over the single tile graphic. Rotate, scale, and skew the tile until you've achieved the desired effect.
10. Save the file.





Transforming a tile within the bitmap fill grid.

You can apply a bitmap fill to the stroke of the shape as well. If you need to change the effect, use the Gradient Transform tool to remove the effect by changing the fill option setting in the Color panel.

Spray Brush and Deco tools

The Spray Brush and Deco tools can be used to create a wide range of pattern effects utilizing the procedural modeling engine that was first available in Flash CS4 Professional. The procedural modeling engine is a Flash JavaScript (JSFL) library that processes geometric algorithms to generate patterns. JSFL is used by Adobe and third-party developers to create custom tools in Flash.

Spray brush

The Spray Brush tool (B) can be used to spray a random pattern of shapes as you draw with the brush on the Stage. The Spray Brush tool is grouped with the Brush tool in the Tools panel (see Figure 3). Configure the drawing options in the Properties panel while the Spray Brush tool is selected. Click and paint with the brush on the Stage to see the effect.

Flash Professional CS5 expands the capabilities of the Deco tool by adding a new range of effects. You can easily generate unique graphics such as buildings, trees, flowers, fire, smoke, and lighting. You can also create symmetrical geometric patterns as a shortcut for creating complex repeating patterns of shapes.

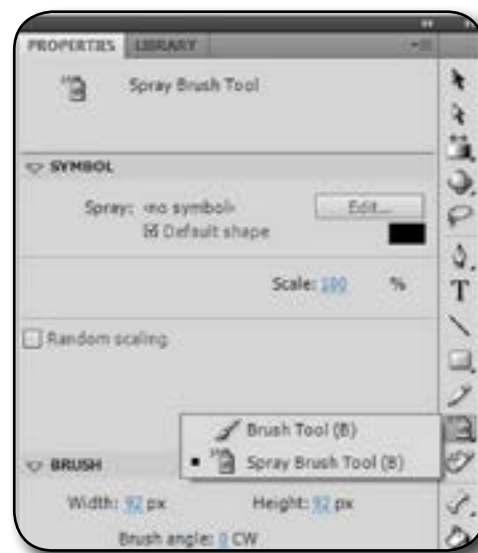
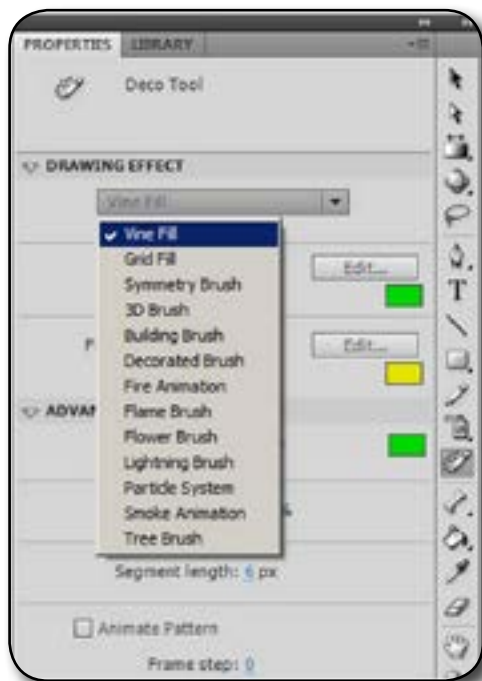


Figure 3. Spray Brush tool in the Tools panel and the related options in the Properties panel.



Deco tool

The Deco tool (U) can be used to create geometric graphic effects and special effects such as lighting, smoke, and fire. You can access the Deco tool in the Tools panel and use the Drawing Effect menu in the Properties panel to choose from a range of different effects

To use the Deco tool, select the drawing effect and options in the Properties panel and then click (or click and drag) the tool on the Stage to create the pattern effect.

Custom graphics with the decorative tools

Either use the default settings for the Spray Brush and Deco tools or create your own movie clip symbols to use as tiles in the pattern. By using your own custom symbols, you can create infinite variations in the range of effects.

The following tools and effects support custom symbols:

1. Spray Brush tool
2. Deco tool (Vine Fill, Grid Fill, Symmetry Brush, 3D Brush, Particle System)
3. To select a custom symbol, click the Edit button next to the <no symbol> field in the Properties panel while the Deco tool is selected (see Figure 5).

After you add your custom symbols, you can edit the effect using the options in the Properties panel and then apply the effect using the Deco tool on the Stage.

Animating Deco tool patterns

You can animate Deco tool patterns by converting them to a symbol and then animating them as you would any other graphic. Add blur effects and filters as well as tweens to enhance the effects. In the case of the Fire Animation, Smoke Animation, and Particle System effects, the Deco tool dynamically generates the animation.

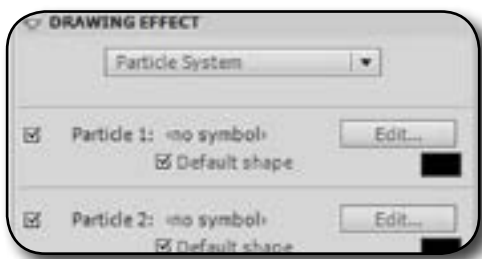


Figure 5. Particle System effect's custom symbol options.

Wrap-up

By the end of this workshop, you should be able to:

- Understand and create Symbols
- How to create and edit a Button
- Understand ActionScript
- Able to use the Deco Tool