Motion
Grand Tour

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Contents

Orientation

1

Allow us to introduce Motion, a new school of interactive motion graphics. The best part of this school is the time spent on the playground—the freedom to let the Wind blow, to Spin, to Spring, to Glow, or to Throw things about with just a drag and drop.

To create motion and effects in Motion, you simply drag a behavior (such as Spin or Throw), or a filter (such as Glow) to your object and let go. Behaviors automatically create motion on an image or object without creating any keyframes. Filters also yield instant results—drop a blur filter on an image and the image is blurred—you don't need to set a value before seeing an effect on your image.

With this instant feedback, you can sit with your clients or your creative or art directors and interactively design a motion graphics project on your desktop. You don't have to set up a tedious keyframed animation, wait for the preview to render, adjust the animation, and wait again. You want a title to fade on, do a little shimmy, and then slide out of view? Simply click Play, then drag the Fade, Random Motion, and Gravity behaviors onto the title in the Canvas—no preview rendering time. "Behaving" has never been so much fun!

Behaviors are designed for creating generalized, fluid motion effects, as well as for creating animated effects that might be too complex or time-consuming to keyframe manually. For example, when the Vortex behavior is applied to an object, all surrounding objects automatically orbit around that object. Or, you can quickly specify that only certain objects are affected.

When recess is over and it's time for precision-timed graphics, you can head off to keyframing class with the click of a button. Keyframing can be used to create an animation in which the object must hit a specific value at a specific time. You can also use a combination of behaviors and keyframes, or create editable keyframes from an applied behavior.

The Motion school not only has a playground, but a Library that is chock full of goodies, including a suite of more than 95 filters. All behaviors, particle systems, fonts, generators, as well as any installed third-party filters are housed in the Library. The Library contains a Preview area that makes browsing and selecting effects fast and fun. For example, you can see an animated preview of a particle system before you bring the particles into your project. The Library also contains stacks of content, including professionally-designed, editable templates that you can use as building blocks for a project. For animated textures such as gradients, swirls, or noise, check out a generator.

By working with content, creating shapes, text, or particles, or by using behaviors or filters within Motion, you can create beautiful, original content such as animated backgrounds, particle effects, and titles—even without importing any external media into your project. This makes Motion an excellent classmate for Final Cut Pro HD, DVD Studio Pro, or your favorite motion graphics or compositing application—you can scoot over to Motion, quickly create professional-level elements, and bring the content into your project. You can even import a saved Motion project into Final Cut Pro HD and DVD Studio Pro, without exporting (rendering) the project.

Whether you produce commercials, documentaries, titles, broadcast or web graphics, corporate presentations, DVD menus, or your own personal video projects—and whether you need the precision of keyframed animation, the free-flow animated effects of behaviors, or a little of both—Motion has the toolset to meet your motion graphics needs. Welcome to Motion, a place where work and play come together. Motion graphics with moxie.

About Motion

In Motion, you create motion graphics and basic compositing projects with imported images (such as Adobe Photoshop or Illustrator files), image sequences, QuickTime movies, audio files, as well as objects created within Motion. These objects include text, masks, shapes, and particles.

All media imported into Motion, or elements created within a project, are referred to as *objects*. In your project, you can apply effects such as filters or behaviors to any object. A *filter* is a process that changes the appearance of an image. For example, a blur filter takes an input image and outputs a blurred version of that image. A *behavior* is a process that applies a value range to an object's parameters, creating an animation based on the affected parameters. For example, the Spin behavior rotates an object over time at a rate that you specify.

A Motion project is made up of *layers* that contain objects. The layer acts as a "parent" to its objects. If you move or apply a filter or behavior to a layer, all objects within that layer are affected. You can also apply filters and behaviors to the individual objects within a layer. Layers and objects can be moved and animated by using behaviors or by setting keyframes. Filters can also be animated.

A *project* represents a single flow of image data built from the bottom up. In a composite with a single layer, the objects within that layer are stacked above one another. Filters and behaviors that are applied to an object appear beneath the object in the Layers list (and can be hidden using the disclosure triangle, or by filtering what is displayed in the Layers tab). The layer represents the resulting image of its objects and their applied behaviors, filters, and composite modes (blend modes).

In a simple example, a layer contains a single image with applied color correction and blur filters (in that order). The image provides the input data to the color correction filter. The output data of the color correction is the input data for the blur filter. The layer represents the result of that image data flow. Layers are also stacked one above the other in a project—the output of the lower layer is the input to the layer above it in the list.

No matter what your level of experience, this tour introduces you to creating motion graphics in Motion. In a style that is a blend of tutorial and user's manual, the tour provides an overview of the user interface components, and a quick start to every main feature of Motion and its general workflow.

Getting Started

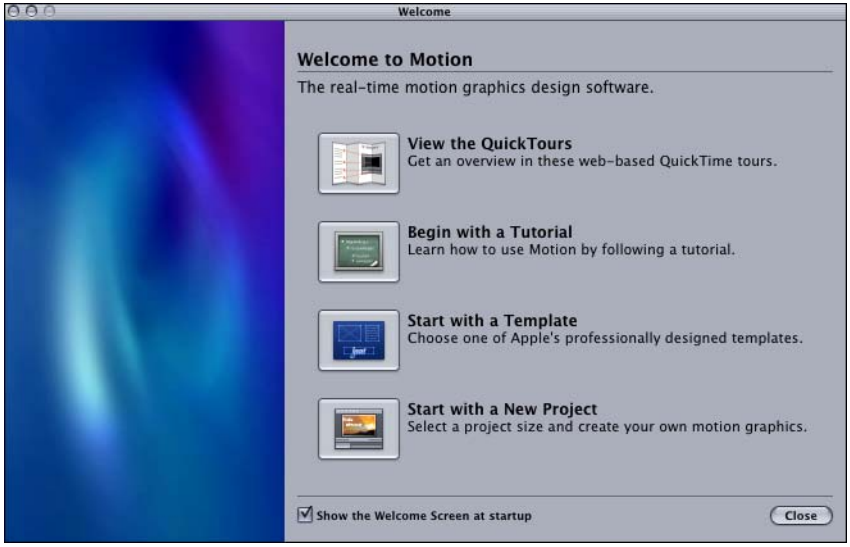
The first steps in any project are to determine your project settings and bring in your media files (unless you are generating content solely from within Motion). A Motion project is a file that contains information that references all media that you import into a project, content created within the project itself (such as shapes, text, and particles), and any filters, behaviors, or animation applied to those objects.

This section introduces the basic Motion workflow, including creating a new project and importing some media files. Once a few elements are imported into the project, the Motion interface is presented in an order relative to building a project.

Note: If you have a three-button mouse connected to your computer, you can right-click to access the same controls specified by the **Control**-click commands in the user documentation. If you are working on a PowerBook G4, keep in mind that some keyboard shortcuts require you to use the **Function** key (**fn**—next to the **Control** key) in conjunction with the keys specified in the user documentation.

Creating a New Project

When you first start Motion, the Welcome Screen appears that contains new project options. From this dialog, you can choose to start with a new project, a premade template, an introductory tutorial, or link to the web-based QuickTime tours.



Note: To skip the initial screen, turn off the "Show the Welcome Screen at startup" checkbox in Motion Preferences. In the Startup section of General Preferences, you can set Motion to automatically do one of the following at startup: Open Last Project(s), Create New Project, Show the Welcome Screen, or Browse Templates.

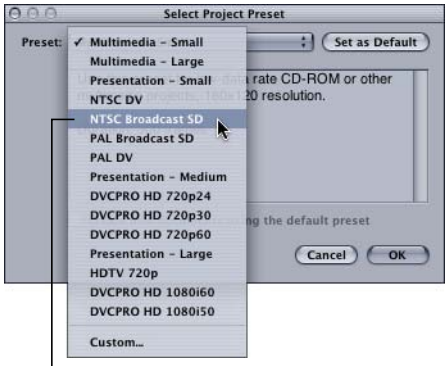
The following example project uses the NTSC Broadcast SD (Standard Definition) project preset. For more information on creating new projects and project presets, see Chapter 2, "Creating and Managing Projects," in *Motion Help*.

To create a project:

1 From the Welcome Screen, click Start with a New Project.

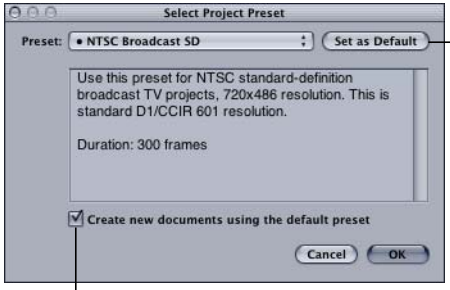
The Select Project Preset dialog appears.

2 Choose NTSC Broadcast SD from the Preset pop-up menu.



Choose a project preset.

The NTSC Broadcast SD preset is selected. In the Select Project Preset dialog, you can set a default project preset that is used each time you start a new project in Motion. To set the preset as the default, click Set as Default and turn on the "Create new documents using the default preset option."



Click to set the current preset as the default project setting.

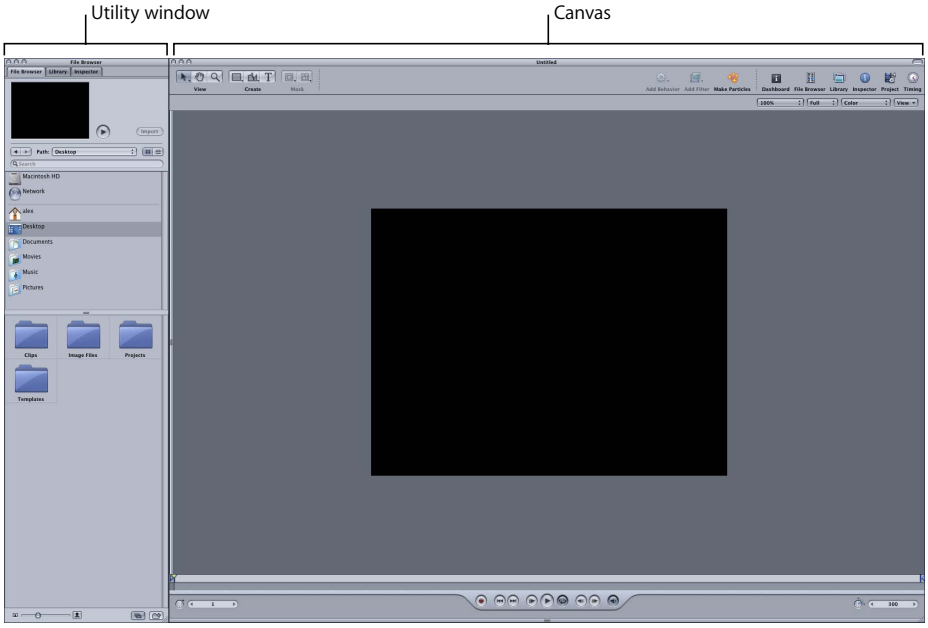
Turn on this checkbox to use the default project preset for any new project.

3 Click OK (or press **Return**).

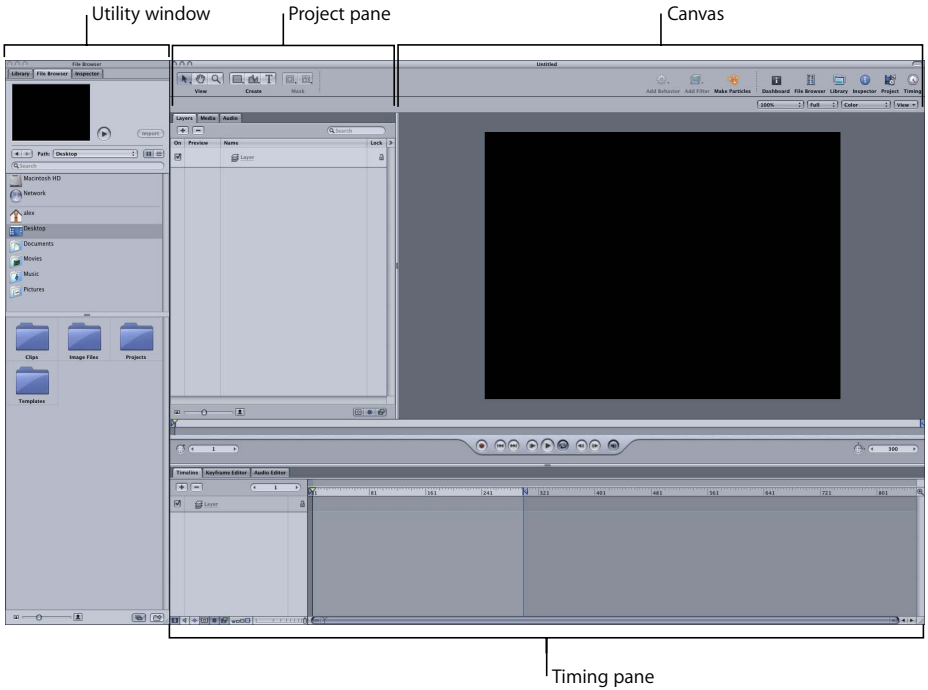
A new standard-definition broadcast resolution (D1, 720 x 486) project opens with a default duration of 300 frames, or 10 seconds.

The Motion Interface

Once a project is created, the Motion interface appears and is comprised of two main components: The Utility window and the Canvas. The Utility window is used to import media files, to preview, select, and apply effects, and to edit and animate the controls for those applied effects. The Canvas is the main area in which to view your project and its elements, as well as select, transform, and animate those elements. The additional interface components, the Project pane and the Timing pane, are not displayed by default. With the intuitive design of Motion, you can easily show and hide interface components when needed.



The Project pane is used to organize and reorder project elements and to control audio. The Timing pane contains the full-featured Timeline, Keyframe Editor, and Audio Editor, which give you an editable, global view of your project, including all project elements and animated parameters.

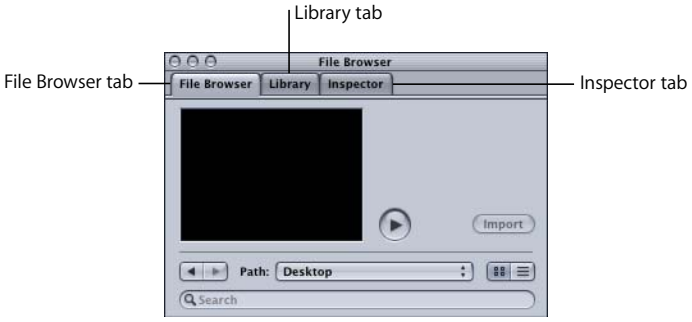


The following sections discuss the Utility window and the Canvas, in an order that represents a typical workflow. The File Browser is addressed first, since it is used to import media files into a Motion project. The Canvas is discussed next, which is where you drag the files from the File Browser. Once the files are imported, the discussion moves back to the Utility window to introduce the Library and the Inspector. From the Library, you browse and apply effects to objects in the Canvas. The applied effects are then edited in the Inspector and the Dashboards.

The Utility Window

The Utility window contains the following tabs:

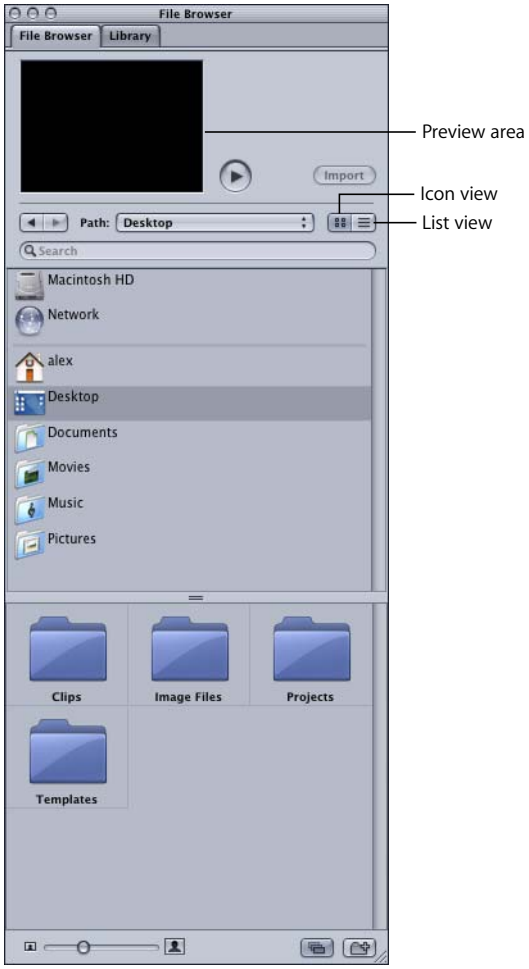
- **File Browser**: Use the File Browser to select and import media files (single images, image sequences, QuickTime movies, and audio files).
- **Library:** Use the Library to browse, select, and apply effects to the objects in your project, as well as to access content such as preset particles and gradients.
- **Inspector**: Use the Inspector to adjust the parameters for all effects and objects in your project, and to create keyframes.



The File Browser

Use the File Browser to locate, preview, and bring in media files from your computer or network. A preview area appears at the top of the browser, and the upper pane contains your hard drives, mounted servers, and home folder. The lower pane displays the folders and folder contents from the location that is selected in the upper pane of the browser.

Note: Like the Mac OS X Finder, you can display the browser contents in icon or list view.



Importing Media

There are three ways to import media into your project:

- The File Browser, which allows you to preview images and play clips (including audio) prior to importing the media
- The File > Import command in the menu bar, which opens the Import Files dialog
- The Finder, which allows you to drag files into a project

To bring in media using the File Browser:

1 Click the File Browser tab.

Note: You can also choose Window > File Browser, or press **Command+1** to display the File Browser.

2 In the upper pane of the browser, select the location of the media file you want to bring in to your project.

The contents of that location appear in the lower pane of the browser.

3 In the lower pane of the browser, do one of the following:

- If the file is not in a folder, select the file.
- If the file is located in a folder, double-click the folder, and then select the file.

In the top of the File Browser, the selected file appears in the Preview area and the file properties, such as format and size, are listed. If the selected media is an image sequence, QuickTime movie, or audio file, the file plays automatically. You can click the Play button next to the Preview area to play or pause the playback.

Play button

You can preview an image in a larger preview window, called the Viewer. **Control**-click the media, then choose Open in Viewer from the shortcut menu. If the file is a QuickTime movie, choose Open in QuickTime Player. You can also double-click the file to open the file in the Viewer.

Note: To uncollapse image sequences, click the Image Sequence button in the lower-right corner of the File Browser.

Image Sequence button

4 Drag the selected file to the Canvas.

Note: To bring in multiple files, you can **Shift**-click or **Command**-click the files (in icon or list view), or drag-select (when in list view). The files are placed in the same position in the Canvas. To move the individual files, click away from the selected files to deselect them, then drag the individual images.

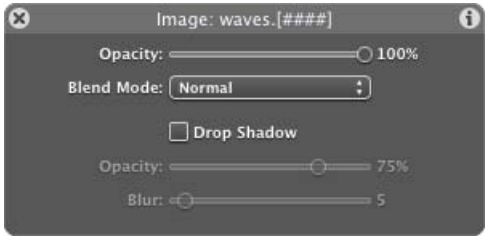
Dynamic Guides

As you drag your image in the Canvas, yellow guides appear and indicate when the file is aligned to the horizontal and vertical center of the Canvas. These guides are called *Dynamic Guides*, and are enabled and disabled using the View menu in the Canvas View controls (in the upper-right corner of the interface, below the Toolbar). To temporarily disable the guides while actively dragging objects in the Canvas, press **Command** as you drag. To toggle the Dynamic Guides on or off, press **N**.

The Dynamic Guides really start to earn their keep when you import and align several objects in the Canvas, as they indicate when objects snap together in alignment.

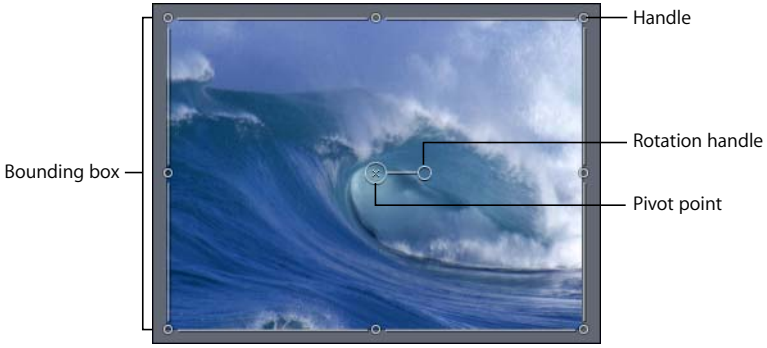
For more information on file management and importing media, see Chapter 2, "Creating and Managing Projects," in *Motion Help*.

Once an object is imported into Motion, a small floating transparent window appears and displays editable properties, such as Opacity and Blend Mode, for that object. This window is called a *Dashboard*. All objects (images, shapes, masks, and text), filters, and behaviors have associated Dashboards.



The Dashboard includes a title bar that displays the type and name of the currently selected object, filter, or behavior. For example, the Dashboard title for the example above reads, "Image: waves.[####]," which represents a Targa sequence (with a four-digit padding). "Image" is the type of object that is selected (an image, image sequence, or a QuickTime movie), and "waves.[####]" is the filename of the selected object. For more information, see "Motion Dashboards" on page 31.

In addition to the Dashboard, an active bounding box appears in the Canvas around the selected object. The default onscreen controls for the bounding box include handles for scaling and rotating, and a pivot point.



These controls let you transform and animate objects directly in the Canvas.

Importing Adobe Photoshop and Adobe Illustrator Files

You can import Adobe Photoshop files and Adobe Illustrator PDF files into Motion. For multilayer Photoshop files, there are three import options:

- Import the layers as a single, merged image.
- Import all layers in the file as a group.
- Import a single layer from the file.

The alpha channels for the Photoshop layers are preserved. There are controls to change the default alpha channel interpretation in the Inspector. For more information on importing and working with Photoshop and Illustrator files, see Chapter 2, "Creating and Managing Projects," in *Motion Help*.

To import a Photoshop file:

1. In the File Browser, select the Photoshop file.
2. Drag the file over the Canvas or Layers tab, and keep the mouse button pressed until the drop menu appears.
3. Choose one of the following options from the drop menu:
   - To import the file as a single layer, choose Import Merged Layers. This option creates a single object in a Motion layer.
   - To import all layers in the file as a group, choose Import All Layers. This option creates a nested layer within a Motion layer—a group in which the individual objects (original Photoshop layers) of that nested layer can be individually modified.
   - To import a single layer, choose the layer name from the drop menu. This option creates a single object in a Motion layer.

Note: When a Photoshop file contains more layers than can be displayed in the drop menu, the Choose Layer option appears in the drop menu. Once Choose Layer is chosen, use the Pick Layer to Import dialog to select which layer to import.

To import an Illustrator PDF file:

1. In the File Browser, select the Illustrator PDF file.
2. Drag the file to the Canvas.

   The file creates a single object in a Motion layer.

The file is imported as a vector image and can be scaled without any degradation to the image (when Fixed Resolution is deselected in the Media tab of the Inspector). The imported file is the size of the Illustrator file. For more information on working with Illustrator PDF files, see Chapter 2, "Creating and Managing Projects," in *Motion Help*.

You can also use the File > Import command to import a Photoshop or Illustrator file.

The Canvas

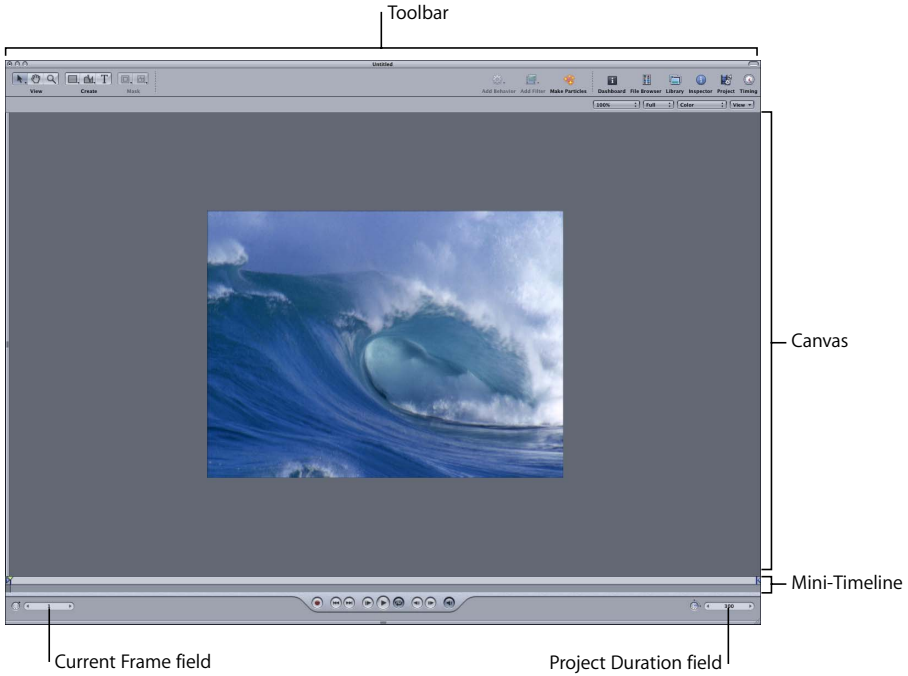
You use the Canvas to view and interact with the objects in your project. You can drag media files directly to the Canvas from the File Browser, as well as apply effects from the Library to those files. As you add and edit effects, your changes update immediately in the Canvas. Text, shapes, and masks are also created directly in the Canvas.

The Canvas also includes the transport controls for scrubbing through and playing your project. Once you have explored the Canvas, return to the Library to apply effects to those objects in the Canvas.

In addition to the viewing area, the Canvas contains the following components:

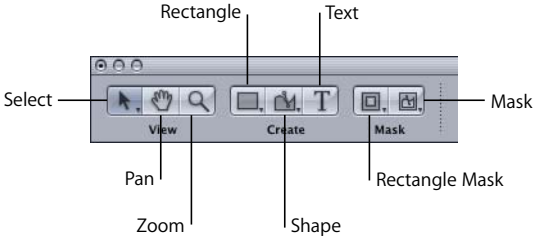
- **Toolbar**: Use the Toolbar to transform objects, show and hide the Motion interface components, add effects, and to change the view of your composite.
- **Current Frame and Project Duration fields:** The Current Frame field displays the current location (frame or timecode) of the project playhead. The Project Duration field displays the length of the project.
- **Transport controls:** Use the transport controls to play or scrub through your project, to enable audio playback, and to enable keyframing.

- **Mini-Timeline:** The mini-Timeline allows you to add objects to your project, to move objects in time, and to trim the duration of an object without having to go into the Timing pane, which contains the full Timeline.

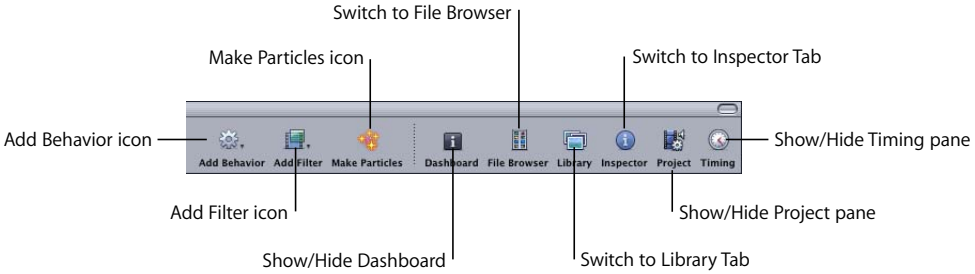


The Toolbar

The left side of the Toolbar contains tools for transforming objects onscreen, creating shapes, and panning and zooming the Canvas.



The right side of the Toolbar contains icons that add filters, behaviors, and particle emitters to objects or layers, as well as show and hide the Motion interface components.



Note: You can customize the Toolbar to better suit your own workflow. For example, you can move the Add Filter and Add Behavior icons so that they are positioned adjacent to the shape tools, or add a shortcut to the Keyframe Editor or Timeline. To access the Customize Toolbar sheet, **Control**-click in an empty area of the Toolbar, then choose Customize Toolbar from the shortcut menu, or choose View > Customize Toolbar. For more information, see Chapter 1, "Getting to Know Motion," in *Motion Help*.

In the Toolbar, a small arrow in the lower-right corner of a tool indicates additional options or modes for that tool. These editing modes change the onscreen controls associated with a selected object. Click the tool and hold down the mouse button to display and select the tool options. For more information on the transform modes, see "Transforming Objects and Layers" on page 56.

Current Frame and Project Duration Fields

The Current Frame field displays the current location (frame or timecode) of the project playhead. The Project Duration field displays the length of the project (usually defined in the Project Properties).

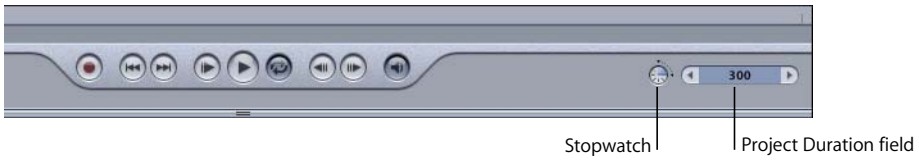
To go to a specific frame in a project:

- Click in the Current Frame field and type the new frame number. You can type a value or drag to increase or decrease the existing value.

Note: You can also drag the playhead (located in the mini-Timeline) to a specific frame. As you drag the playhead, the current frame is displayed in the Current Frame field.

To switch the time display in a project from frames to timecode:

- Click the stopwatch next to the Project Duration field or next to the Current Frame field.



To change the length of an existing project:

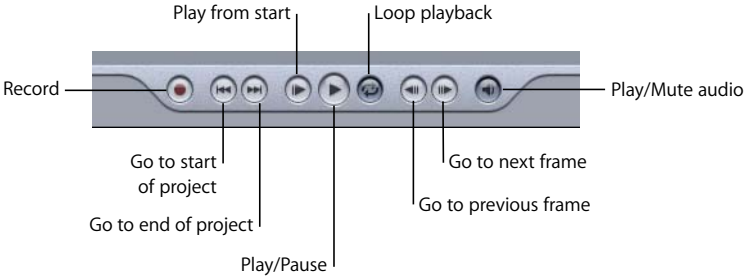
- Enter a new project duration in the Project Duration field (located in the lower-right portion of the Canvas adjacent to the transport controls).

Note: You can also choose Edit > Project Properties (or press **Command+J**) and set the Duration field to a new project length, as well as change additional project settings.

The Transport Controls

Use the transport controls to play your project, move to the beginning or end of a project, or scrub through your project one frame at a time. The controls also enable keyframing and audio playback.

If you have a Wacom tablet installed on your computer, you can use gestures to control playback and scrubbing, as well as to navigate your project. Gestures are contiguous patterns drawn on your tablet that represent specific commands, such as advance one frame forward, zoom in or out of the Canvas, and so on. For more information, see Appendix C, "Using Gestures," in *Motion Help*.



To play your project:

- Click the Play button.

The Play button changes to a Pause button.

To stop or pause playback:

- Click the Pause button.

Note: You can also start and stop playback by pressing the **Space bar**. To quickly return to the beginning of a project, press **Home**.

During playback, the Status Bar (located below the Toolbar) displays the project's fps (frames per second).

In the Appearance pane of Motion Preferences, you can also choose to display Color (the color the pointer is over in the Canvas) and Coordinates (the position of the pointer in the Canvas) information in the Status Bar.

Note: In addition to using the step frames controls in the transport controls, you can press **Left Arrow** or **Page Up** to move back a single frame or press **Right Arrow** or **Page Down** to advance a single frame. There are several keyboard shortcuts for the transport controls and additional frame navigation in the Mark menu.

The Record Button

Use the Record button to enable automatic keyframing. When Record is enabled, keyframes are automatically created whenever you change the value of a parameter. This means that when Record is enabled, any value changes in the Canvas, Dashboard, or Inspector creates a keyframe. For a description of keyframes, see "Keyframe Basics" on page 103.

With Record enabled and while playing the project, you can create a *motion sketch* animation path by dragging an object in the Canvas in the pattern of your choice. Both the position and speed of your movement are recorded and applied to the position keyframes for that object. You can set Motion to record a keyframe at each frame, or to apply keyframe thinning. For more information, see "Setting Recording Options" on page 112.

To enable automatic keyframing:

- Click the Record button (or press **A**).

  The Record button pulses red.

To disable automatic keyframing:

- Click the Record button (or press **A**).

  The Record button stops pulsing red.

To animate the position of an object using motion sketch (during playback):

1. In the transport controls, enable Record (or press **A**).
2. Click Play (or press the **Space bar**).
3. Drag the object you want to animate in the Canvas.

To animate the position and rotation of an object:

1. In the transport controls, enable Record (or press **A**).
2. Go to the frame where you want to set the first keyframe.
3. In the Canvas, position the object.
4. Go to the frame where you want to set the next keyframe.
5. Move the object to its new position and drag the rotation handle.

   Note: Do not drag the actual keyframe (the red point) to move the object. Rather than creating a new keyframe, you merely reposition the existing keyframe.
6. Disable the Record button.

You can press the **Space bar**, or scrub the playhead, to view the animated object. As it rotates, the object moves from its initial position to the position set in step 5 above.

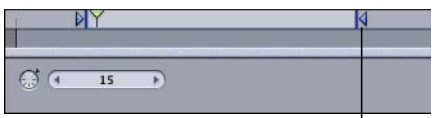
The Basic Motion behaviors allow you to quickly set up this type of animation without having to create keyframes. For more information, see "Applying Behaviors and Filters to Objects" on page 27.

Note: You can also use the Animation menu to explicitly set keyframes for objects and effects without using the Record button. The Animation menu, located in the Inspector, also displays whether or not a parameter is animated. For more information, see "Keyframing in the Inspector" on page 114.

Keyframes can be viewed in the Timeline and modified in the Keyframe Editor, both of which are located in the Timing pane. For more information, see "Using Keyframes in Motion" on page 103.

To set a play range shorter than your project duration:

1. Move the playhead to the In point you want, then choose Mark > Mark Play Range In (or press **Command+Option+I**).
2. Move the playhead to the Out point you want, and choose Mark > Mark Play Range Out (or press **Command+Option+O**).



Note: You can also drag the Play Range arrows to define a playback range. As you drag the In or Out point, the new In or Out point frame number is displayed.

The Mini-Timeline

You can use the mini-Timeline to import files, as well as to quickly slip objects in time or trim the duration of an object (without having to open the Timing pane and display the full Timeline). The bar that appears in the mini-Timeline represents the currently selected object or layer.

Note: Keyframes can appear in the full Timeline, but do not appear in the mini-Timeline.

When you import multiple files from the File Browser to the mini-Timeline, you have the option to composite the objects (place the objects on top of each other), or to sequence the objects (place the objects one after the other). This option is also available in the full Timeline.

To add a file to the mini-Timeline:

1. In the File Browser, select the file you want to import.
2. Drag the file to the mini-Timeline and position the pointer over the gray bar in between the light-gray bar (that contains the playhead) and the transport controls.

   While dragging the pointer in the mini-Timeline, the current frame is displayed and the "+" sign appears next to the pointer, indicating you can drop the object at any time. A transparent thumbnail of the object also appears next to the pointer.

3. At the correct frame, release the mouse button.

   The object is added to your project at the specified frame.

To add multiple files to the mini-Timeline:

1. In the File Browser, select the files you want to import.
2. Drag the files to the mini-Timeline, and keep the mouse button pressed until the drop menu appears.

3 Make one of the following choices from the drop menu:

- Choose Composite to place the objects on top of one another. The objects are positioned in the order selected—the last object selected is placed at the top of the object list.
- Choose Sequential to place the objects one after the other. The objects are positioned in the order selected—the last object selected in the File Browser is placed at the end of the sequence.

When importing Photoshop and Illustrator files to the mini-Timeline, the import options are identical to the drop menu in the Canvas. For more information, see "Importing Adobe Photoshop and Adobe Illustrator Files" on page 16.

Note: Files can also be added to a project in the Timeline, located in the Timing pane. For more information, see "The Timeline" on page 97.

The next section returns to the Utility window and discusses previewing and selecting effects in the Library, and applying those effects to the objects in the Canvas as the project plays back.

The Library

The Library, located in the Utility window, can be thought of as the place from which you "check out" all the goodies for your project. These include effects (behaviors, filters, particle emitters), generators (solids, gradients, animated patterns), text styles, gradient presets, any third-party filters you have installed, and so on.

You can also save modified behaviors, filters, gradients, text styles, and so on to the Library. These saved presets can then be applied to other objects in your current project or future projects. Layers or objects can also be saved to the Library and used in other projects. Your saved Library content can be shared with other users. For more information on saving and sharing, see *Motion Help*.

To display the Library:

- In the Utility window, click the Library tab.

Note: You can also choose Window > Library (or press **Command+2**), to display the Library.

The Library categories are listed in the left column of the Library, and the subcategories appear in the right column. For example, when the Behaviors category is selected, the Behaviors subcategories (All, Basic Motion, Parameter, Particles, Simulations, Text Animation, and Text Sequence) appear in the right column. The contents of the subcategory appear in the lower pane of the Library, which is referred to as the *stack*.

The following table describes the Library folders, categories, and subcategories.

Library folder or category	Description
Behaviors category	Includes the Basic Motion, Parameter, Particles, Simulations, Text Animation, and Text Sequence behavior subcategories.
Filters category	Includes the Blur, Border, Color Correction, Distortion, Glow, Keying, Matte, Sharpen, Stylize, Tiling, Time, and Video filter subcategories.
3rd Party Filters category	Includes any third-party filters you have installed on your system. You can set the path to your third-party filters in Motion General Preferences (**Command+,** [comma]), 3rd Party Plug-ins section.
Generators category	Includes the Generators subcategory. Generators are preset objects, such as Noise, Color Solid, and Soft Gradient, with parameters that you can edit or animate to create still or animated elements in your project.
Particle Emitters category	Includes the Abstract, Nature, Pyro, SciFi, Smoke, and Sparkles emitter subcategories.
Shapes category	Contains premade shapes that can be animated as project elements, used as image masks, or as sources for particle cells.
Gradients category	Includes the Gradients subcategory. The preset gradients can be applied to text, particles, and shapes. For example, a gradient can be dragged to a text object in the Canvas or Layers tab.
Fonts category	Provides a browser for installed fonts.
LiveFonts category	Includes the ProSeries LiveFonts subcategory, which consists of 10 fonts. If Final Cut Pro HD and LiveFonts are installed on your computer, you can use the full suite of LiveFonts in Motion.
Text Styles category	Contains premade text styles that can be applied to text objects.
Content folder	Includes the Particle Images and Template Media.
Favorites folder	Provides a customizable location for frequently-used or customized filters, effects, gradients, and so on.
Favorites Menu folder	Any items saved in this folder appear in the Favorites menu.

Any modified filters, behaviors, and other presets can be saved to the Library. For example, a customized gradient is saved to the Gradients category in the Library. Or, you can drag a customized generator into the Library, and it is automatically saved to the Generators category. When a file is saved to the Favorites or Favorites menu groups, an alias is created in that group, and the preset is stored in its own category. For example, if you drag a customized behavior into the Favorites group, an alias is created in the Favorites group, and the behavior is saved in the Behaviors category.

Previewing Items in the Library

You can preview items in the stack before bringing the item into your project. For example, in the Particle Emitters category, click a preset in the Library stack to play the particle system in the Preview area at the top of the Library tab. Some particle emitters let you drag the pointer in the Preview area to see how the emitter looks when it moves. In following images, the Embryo particle emitter is selected from the SciFi particle emitter subcategory and the Magic Dust particle emitter is selected from the Sparkles subcategory.

Selected particle emitter playing in Preview area

Mouse pointer dragging particle emitter in Preview area

The organizing and previewing capabilities of the Library make selecting an effect quick and fun. Simply click an item in the stack—if the preview makes you happy, drag the item to your project.

Applying Behaviors and Filters to Objects

This section provides a quick start to applying behaviors and filters to objects in the Canvas. For more information on working with behaviors, see "About Behaviors" on page 61. For more information on working with filters, see "Working With Filters" on page 91.

In Motion, behaviors can be applied to objects while a project plays back, or when playback is stopped. Behaviors animate an object by automatically generating a range of values for that object's parameters. When a behavior or filter is applied to an object, it is always applied at the beginning of the object—no matter where the playhead is in time when the behavior is applied—and exists for the duration of that object (with the exception of Text Sequence behaviors). This is also true for behaviors and filters applied during playback. For example, if you are playing a project and you drag a behavior to an object (that is 300 frames in duration) when the playhead is at frame 100, the behavior is placed at frame 1 (and ends at frame 300). This method allows for truly interactive animating—you see immediate results for behaviors and filters while your project plays.

Note: There is an editable, graphical representation of behavior and filter durations in the Timeline and mini-Timeline, discussed in "The Timeline" on page 97.

In the following steps, a play range of 60 frames is set in a 300-frame project. After that, two behaviors from the Basic Motion group are applied to an object in the Canvas. The applied behaviors create a simple animation in which an image fades in and scales up. Next, the speed and simplicity of filter application is demonstrated with a color correction filter added to the object.

To set a 60-frame play range:

1. In the Current Frame field, enter 60.

   The playhead moves to frame 60.

2. Choose Mark > Mark Play Range Out (or press **Command+Option+O**).

   The play range is defined as 60 frames in the 300-frame project.

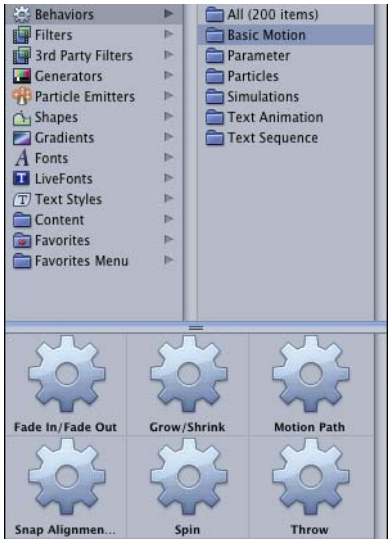
To start playback:

- In the transport controls, click the Play button (or press the **Space bar**).

To apply a Basic Motion behavior from the Library:

1. In the Library, click the Behaviors category.

   The Behaviors subcategories appear and are listed alphabetically. The All subcategory is selected by default, and the behaviors appear in the Library stack.

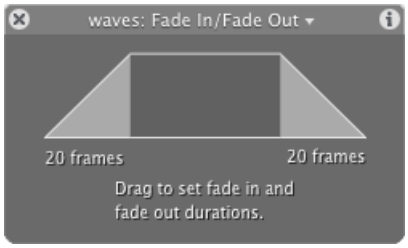


2. Click the Basic Motion subcategory.
3. From the stack, drag the Fade In/Fade Out behavior to an object in the Canvas.

   Note: After selecting an item in the Library stack, you can also click the Apply button in the Preview area to add the behavior (or filter) to a selected object.

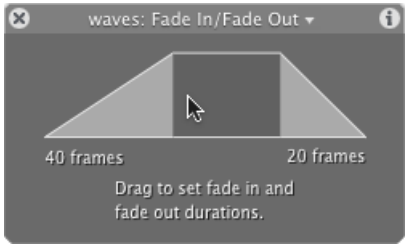
When the "+" (plus) sign appears next to the pointer, the behavior can be "dropped" on the object.

The Fade In/Fade Out Dashboard should appear. If the Dashboard is not displayed, press **D**. By default, the object's opacity fades in from 0 percent to 100 percent over the first 20 frames of the object, and fades out from 100 percent to 0 percent over the last 20 frames.



Note: You do not have to select an object before a behavior is dragged to that object in the Canvas. However, if you are working with many objects, you may need to select the object from the Layers list in order to locate the correct object. To use the Add Behavior icon in the Toolbar to select and apply behaviors, you must first select an object to enable the icon. For more information on working with layers and objects, see "Using the Layers Tab" on page 45.

4 In the Fade In/Fade Out Dashboard, click in the gray shaded fade-in region (on the left side of the controls) and drag to the right until the Fade-In frame duration reads 40 frames.



The object fades in from frame 1 to frame 40. The behavior has applied a value range to the object's Opacity parameter; however, it has not created any keyframes for the Opacity parameter.

To apply a Basic Motion behavior from the Toolbar:

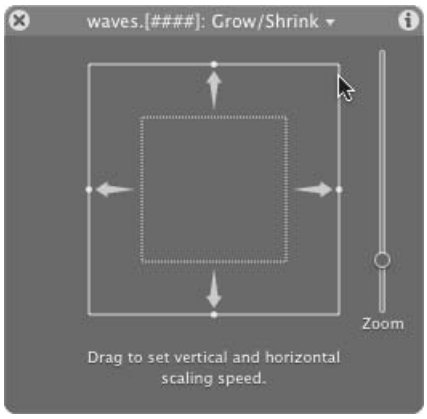
1 In the Canvas, select the object to which you want to apply the behavior. This example uses the same object to which the Fade In/Fade Out behavior was applied.

2 In the Toolbar, click the Add Behavior icon, then choose Basic Motion > Grow/Shrink from the pop-up menu.

The Fade In/Fade Out Dashboard is replaced by the Grow/Shrink Dashboard.

Note: To select and apply behaviors and filters using the Toolbar icons, you must first select an object.

3 In the Grow/Shrink Dashboard, click the edge of the box and drag outward.



The object scales up over time.

To apply a filter to an object:

1 In the Library, click the Filters category.

The Filters subcategories appear and are listed alphabetically. The All subcategory is selected by default, and all available filters appear in the Library stack.

2 Click the Color Correction subcategory.

3 In the stack, drag the Contrast filter to the object in the Canvas.

The Dashboard changes to the Contrast filter Dashboard.

Note: You can also apply a filter to an object from the Add Filter icon in the Toolbar.

4 In the Contrast Dashboard, move the slider to adjust the Contrast value.

Note: Filters can be easily keyframed in the Inspector or by using the Record button. For more information, see "Keyframing Filters" on page 116.

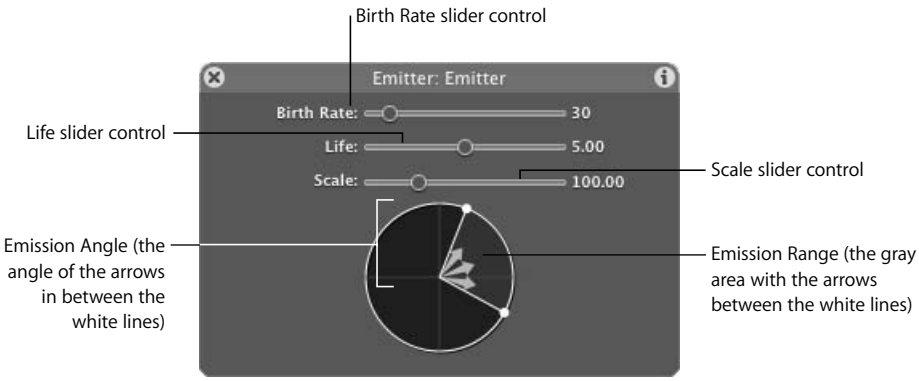
Motion Dashboards

Whenever an object is added to your project, or an effect is applied to an object, the Dashboard for that object or effect (behavior, filter, mask, text, shape, and so on) appears by default (if the Dashboard is not hidden). The Dashboard is a floating window that contains a group of commonly-adjusted parameters for the selected object or effect. Using the school analogy, you can think of the Dashboards as the place where the "popular kids" hang out. As effects are added to the object, the Dashboard updates to show the most recently-added effect.

The Dashboard is a subset of the main parameters group of an object or effect, which is located in the Inspector tab of the Utility window. The Inspector contains every available parameter for any object or any effect. Often, the controls in the Dashboard provide a more graphical representation of a behavior's parameters that is easier and more fun to use than digging into the Inspector (seriously, these things are the cat's pajamas). The requirements of your individual project elements are likely to define when you use the Dashboards and when you use the Inspector.

The following examples illustrate what is probably the biggest difference between the Dashboard and the Inspector—the Particle Emitter Dashboard and the Particle Emitter tab in the Inspector. Don't be alarmed: The single-shape Particle Emitter tab contains the most parameters of any effect in Motion.

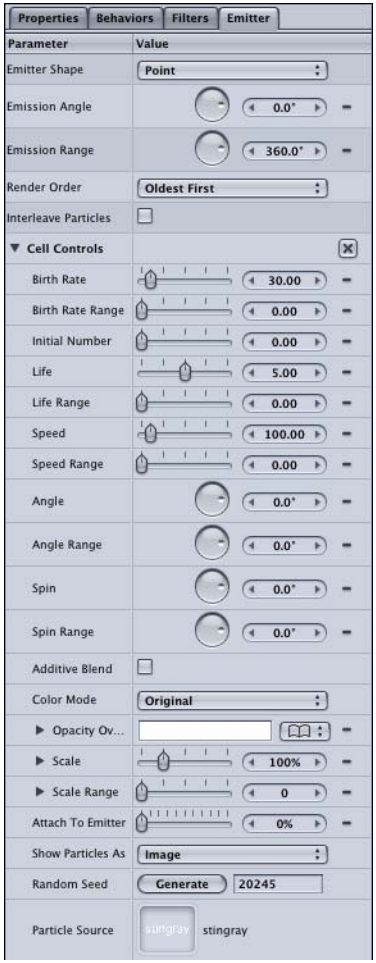
The first image shows the Particle Emitter Dashboard.



Cheeky little monkeys, aren't they? The Emitter Dashboard contains the following particle parameters:

- Birth Rate (slider control)
- Life (slider control)
- Scale (slider control)
- Emission Range ("pie-graph" control)
- Emission Angle ("pie-graph" control)
- Speed (length of arrows in "pie-graph" control)

The second image shows the Emitter tab in the Inspector. The emitter contains a single particle cell (the text object "stingray," as shown at the bottom of the tab in the Particle Source parameter). A particle emitter can have multiple particle cells (which can include text objects, images, or shapes drawn in Motion). Notice that the Emitter tab also contains the Birth Rate, Life, Scale, Emission Range, and Emission Angle parameters found in the Emitter Dashboard.



Quite a bit bigger monkey, admittedly. The Particle Emitter tab shows every available parameter for the emitter (including the parameters in the Dashboard). Since the Dashboard is a subset of the larger Inspector parameter group, any change to a parameter value in the Dashboard is reflected in the Inspector.

For more information on working with particles, see "Creating Particles" on page 139.

To display the Dashboard, do one of the following:

- In the Toolbar, click the Dashboard icon.
- Select the object or effect, then press **D** (or **F7**).

To hide the Dashboard, do one of the following:

- Click the close button on the Dashboard.
- In the Toolbar, click the Dashboard icon.

To reposition the Dashboard:

- Drag on a blank area of the Dashboard.

When multiple behaviors and filters are applied to an object, you can cycle through the Dashboards for all of the effects applied to the selected object.

To cycle the Dashboards of an object:

- With the object selected, press **D**.

The Dashboards are cycled in the order that the effects are applied. To cycle the Dashboards in reverse, press **Shift+D**.

When multiple objects of the same type are selected, a combined Dashboard appears, and "Multiple Selection" appears in its title bar.

The following section continues the Motion tour by moving to the Inspector, which is used to modify objects, shapes, and text, as well as the behaviors and effects applied to the objects in a project.

For information on animating using the Dashboard controls, see "Keyframing in the Dashboard" on page 113.

The Inspector

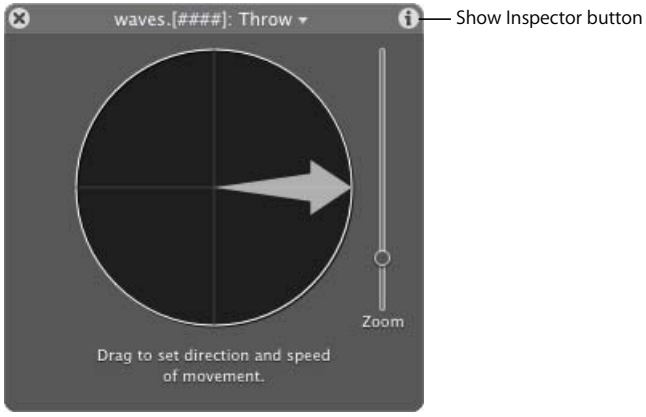
While the Dashboard contains the "popular" controls, think of the Inspector as the school principal—with its eye on everything. The Inspector contains all parameters—including the parameters found in the Dashboards—for all objects and effects within a project. You can use the Inspector to transform objects, change blend modes or colors of objects, adjust object and footage properties, adjust all behavior or filter parameters, create keyframes, and so on.

Parameter Basics

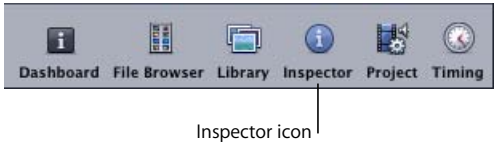
A parameter can be described as a property whose value determines the characteristics or behavior of an object. In a basic example, a Scale parameter set to a value of 200 at frame 1 and a value of 50 at frame 30, makes that object two times its original size (200 percent) at frame 1 and scales it down to one-half its original size (50 percent) at frame 30.

To display the Inspector, do one of the following:

- In the Utility window, click the Inspector tab.
- In a Dashboard, click the Show Inspector button.



- In the Toolbar, click the Inspector icon.



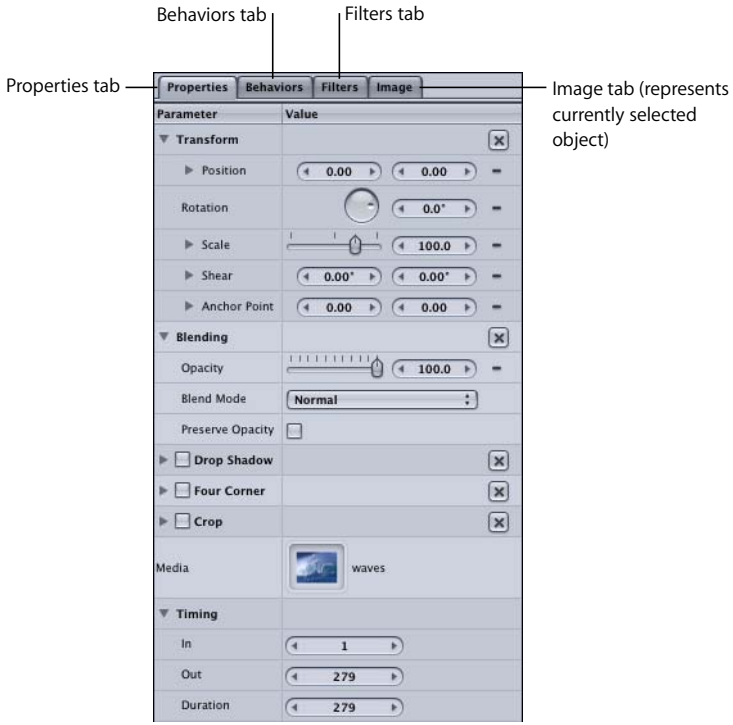
- Choose Window > Inspector, (or press **Command+3**).

The Inspector contains four tabs: Properties, Behaviors, Filters, and Object. The first three tabs—Properties, Behaviors, and Filters—are common to all objects. The fourth, the Object tab, changes depending on the object that is selected. The following sections provide a brief description of the four tabs.

Properties Tab

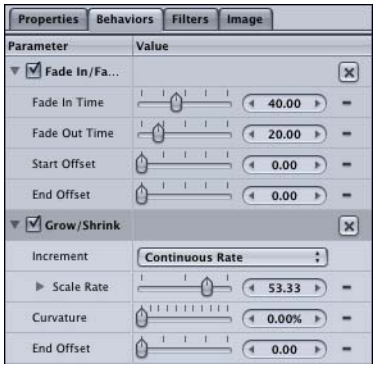
The Properties tab contains controls for the basic object properties, such as Position, Rotation, Scale, Blend Modes, Opacity, and so on. The Properties tab, shown in the image below, is displayed by default when an image, image sequence, or QuickTime movie is selected.

The following image represents the Properties tab in the Inspector for a selected object—a QuickTime movie called "waves." The "waves" file appears in the Media parameter of the Properties tab.



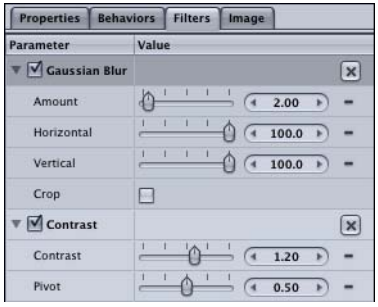
Behaviors Tab

The Behaviors tab contains all controls for any behaviors that are applied to the currently selected object. If no behaviors are applied to the currently selected object, the Behaviors tab is empty.



Filters Tab

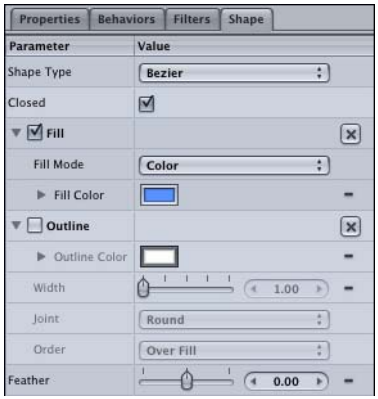
The Filters tab contains all controls for any filters that are applied to the currently selected object. If no filters are applied to the currently selected object, the Filters tab is empty.



Object Tab

The fourth tab in the Inspector is the Object tab. The Object tab changes depending on the type of object that is currently selected. In the above images, the Object tab is the Image tab, because an image is the currently selected object. When a text object is selected, the Object tab becomes the Text tab and contains text-specific parameters. In the following image, a shape is the selected object, so the tab changes to the Shape tab.

Note: When an image is the selected object, the Image tab is empty because all of the image parameters are displayed in the common Properties tab.

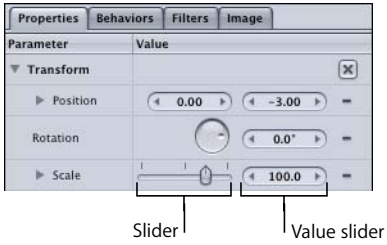


Inspector Controls

The parameters in the Inspector are edited by several different types of controls, such as sliders, value sliders, dials, color wells, pop-up menus, and so on. This section provides a brief description of the Inspector's parameter controls.

Sliders

Drag the sliders left or right to set a value. Depending on the specific parameter, sliders have assorted value ranges.



Value sliders

The value slider allows you to type a specific number in the value field, or to drag in the value field to set a value. Often, you can type a much higher number in the value slider than can be achieved by dragging the normal sliders. When using the value sliders, you can use a modifier key to make normal, small, or large value adjustments. The value sliders are contextual, which means that the "normal," "fine," and "coarse" increments are specific to the parameter. For example, a "normal" increment for Opacity is 1, a "fine" increment is .1, and a "coarse" increment is 10.

To change values in normal increments, do one of the following:

- Drag left or right in the value field.
- Click the decrement arrow (to the left of the field) to decrease a value, or click the increment arrow (to the right of the field) to increase a value.
- If you have a three-button mouse with a scroll wheel, click in the value field and use the scroll wheel on the mouse.

To change values in fine increments, do one of the following:

- **Option**-drag in the value field.
- **Option**-click the decrement arrow to decrease a value, or **Option**-click the increment arrow to increase a value.
- If you have a mouse with a scroll wheel, **Option**-scroll in the value field.

To change values in coarse increments, do one of the following:

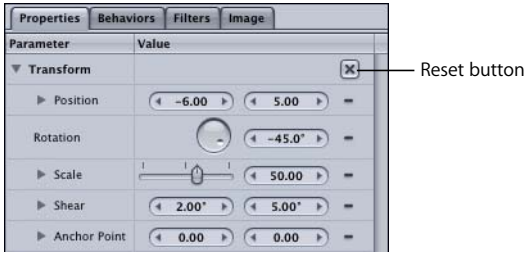
- **Shift**-drag in the value field.
- **Shift**-click the decrement arrow to decrease a value, or **Shift**-click the increment arrow to increase a value.
- If you have a mouse with a scroll wheel, **Shift**-scroll in the value field.

Reset options

You can choose to reset an individual parameter of a property, or all parameters of a property. For example, you can reset only the X or Y position of the Transform property, or you can reset all Transform properties, which include Position, Rotation, Scale, Shear, and Anchor Point. Resetting the parameters of an effect that is applied to an object removes any keyframes and sets the parameters back to their default values.

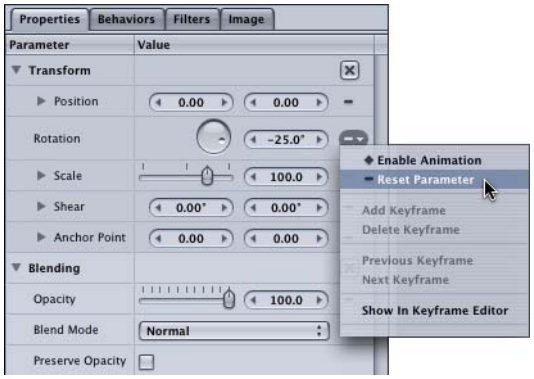
To reset all parameters of a property:

- Click the Reset button in the parameter row.



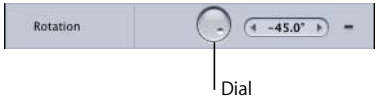
To reset an individual parameter:

- Click the Animation menu icon, then choose Reset Parameter.



Dials

Drag a dial to control parameters such as the angle of gradients and the rotation of objects.

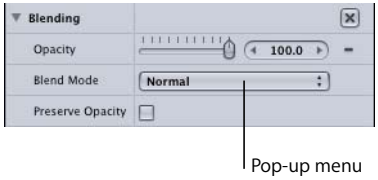


Checkboxes

Use checkboxes to turn objects on and off. This applies to filters and behaviors, drop shadows, four-corner pinning, cropping, and so on.

Pop-up menus

Click a pop-up menu and hold down the mouse button to choose fill options for text and shapes fill options, to set blend modes, and so on.

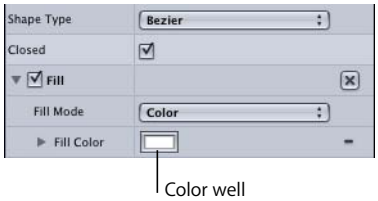


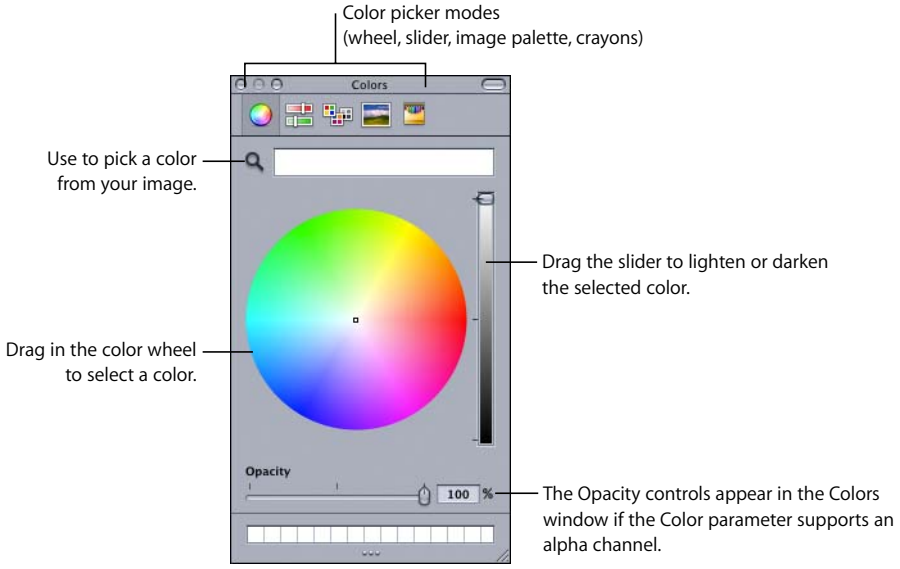
Color wells

Use the color wells to set a color for drop shadows, shape fills, text properties, and so on.

To select a color, do one of the following:

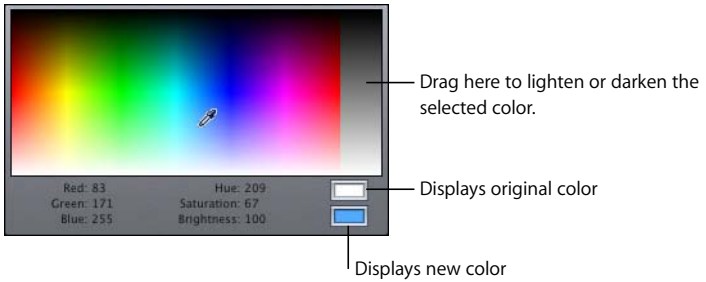
- Click the color well and select a color from the Colors window.





Note: To select a color from the screen, click the Color Picker tool in the Colors window, then click the color you want to use on the screen.

- **Control**-click a color well to display the color picker, and drag in the color spectrum to select a color.



The Animation menu

In the Inspector, notice that most of the parameters are followed by a "–" button at the end of the parameter row. This provides access to the Animation menu, in which you can add keyframes, reset a modified parameter, choose to show an animated parameter in the Keyframe Editor, and so on. If the parameter is affected by a behavior, a behavior icon appears in the Animation menu and allows quick access to the Inspector tab for that behavior.

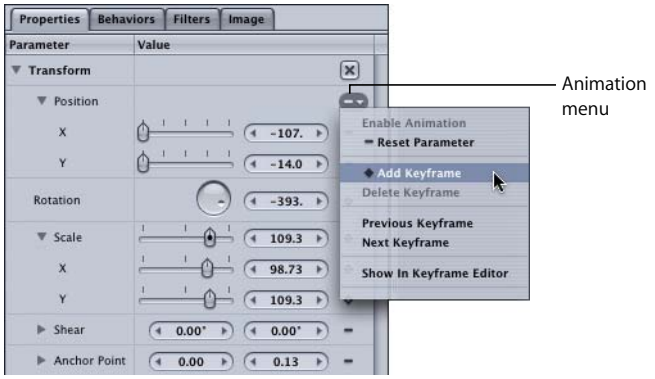
There are two modes of working with the Animation menu. When the Record button is enabled, a keyframe is created any time a parameter is adjusted in the Inspector. You can use the Animation menu to create a keyframe without changing a value, for example, to hold an animated parameter's value for a specified frame range.

When the Record button is disabled, you can add keyframes explicitly in the Animation menu. In the following example, an object's position is keyframed so the object travels across the screen. The Animation menu in the Inspector is used to create the keyframes, and the Record button is disabled.

To explicitly create keyframes in the Inspector (when Record is disabled):

1. Select the object to be animated and show the Inspector.
2. Go to the frame where you want to set the first keyframe.

3 In the Properties tab, click the Animation menu in the Position parameters, then choose Add Keyframe.



A filled gray diamond appears in the Animation menu, indicating that a keyframe exists at that frame. The keyframe is set to the current position.

4 Position the object.

The keyframe updates to the new position values.

5 Go to the next frame where you want to create a keyframe.

6 Choose Add Keyframe from the Animation menu.

Important: Notice that a keyframe must be added first, before you change the position of the object. If you adjust the object's position at this point, before adding a second keyframe, you shift the entire curve because Record is disabled.

7 Move the object to the new position.

Using the Animation Menu vs. Using the Record Button

When Record is disabled, setting a keyframe using the Animation menu is not the same as when Record is enabled. When Record is enabled, any changes to a parameter's value result in the creation of a keyframe. When Record is disabled, the Animation menu allows you to explicitly set keyframes. This method can be useful for changing the value of an entire curve, without having to go in and delete or edit your initial keyframe. Also, explicit keyframing can be handy for playing with your design and only setting a few pivotal keyframes, rather than keyframing every move you make in your project.

When explicitly setting keyframes, keep in mind that you must add a keyframe prior to modifying a value, or you are merely changing the overall value for that parameter (shifting the entire curve). For more information, see "Keyframing in the Inspector" on page 114.

The Project Pane

When media (such as movies, images, and image sequences) is brought into Motion, it becomes an object in a layer. Shapes, text, and masks created within Motion also become objects in a layer. Any imported media is added to the Media tab, which acts as a sort of storage unit for your media. Shapes, text, and other objects created within Motion are not added to the Media tab.

On import, objects can be added to an existing layer, or you can create a new layer for the objects.

You can apply behaviors, transformations, filters, masks, or blend modes to any object in a layer. You can also apply behaviors, transformations, filters, masks, or blend modes to the layer itself. You can have as many objects in a single layer as you want—a layer acts as the "parent" of its objects (movies, images, image sequences, shapes, and so on). For example, if you move a layer, all objects within that layer are also moved. If you apply a behavior or filter to a layer, that behavior or filter is applied to all objects within the layer as a "nest." The size of a layer is determined by the objects contained within the layer.

You can view and organize all layers and objects within a project in the Project pane. This section provides a general overview of the Project pane, but mainly focuses on the Layers tab of the Project pane in which most of your compositing takes place.

The Project pane contains lists of all media and objects in your project, as well as the effects applied to those objects.

To display the Project pane, do one of the following:

- In the Toolbar, click the Project icon.

Project icon

- Choose Window > Show Project Pane (or press **F5**).

  The Project pane appears.

The Project pane contains three tabs that allow you to view the objects in your project.

Layers Tab

The Layers tab displays the structure of your project. The main building block of a project is a layer. A layer contains objects and the behaviors and filters applied to those objects. Filters and behaviors can also be applied to layers. Use the Layers tab to manage your composite.

Media Tab

The Media tab displays all media (including audio) that has been imported into a project, whether or not the media is used as an object in the project. You can import media directly into the Media tab by clicking the Add button ("+") at the top of the Media pane, or by using the File > Import menu command (from within the Media tab). When media is imported in this manner, you can think of the Media tab as a holding bin. One reason to import files into the Media tab is so you can use the media as the source for a text object texture or a mask. You can add files from the Media tab to your project at any time by dragging the file to the Canvas or Timeline.

Note: Text objects and other shapes created within Motion do not appear in the Media tab.

Audio

The Audio tab allows you to control the volume (gain) and panning (balance) of an audio track, as well as turn tracks on or off, solo a track, add and remove tracks, and search for tracks. For more information, see "Audio" on page 162.

Using the Layers Tab

Use the Layers tab to assist in building your project. In the tab, you can view and manage the structure of your composite—the relationships between objects (including layers) and their applied effects. Use the Layers tab to:

- Add and delete objects and effects
- Rename and reorder objects and effects
- Show, hide, and lock objects and effects
- Change the opacity of an object
- Set the blend mode of an object
- Search for objects, behaviors, filters, and so on

The Layers tab also contains buttons to show or hide any filters, behaviors, and masks that are applied to objects.

Compositing Basics

Compositing is an essential part of motion graphics. Any time you have more than one object in your Layers tab, you are compositing—it is the process of combining images and objects together to create a single-layered, final image.

The compositing process can range from the very simple, such as placing a logo over an animated background, to the very complex, such as keying multiple green screen elements over a background plate, performing color correction, integrating 3D objects, and adding an animated particle effect.

For more information, see Chapter 3, "Basic Compositing," in *Motion Help*.

To display the Layers tab:

- In the Project pane, click the Layers tab (or press **Command**+4).

Adding Media to the Layers Tab

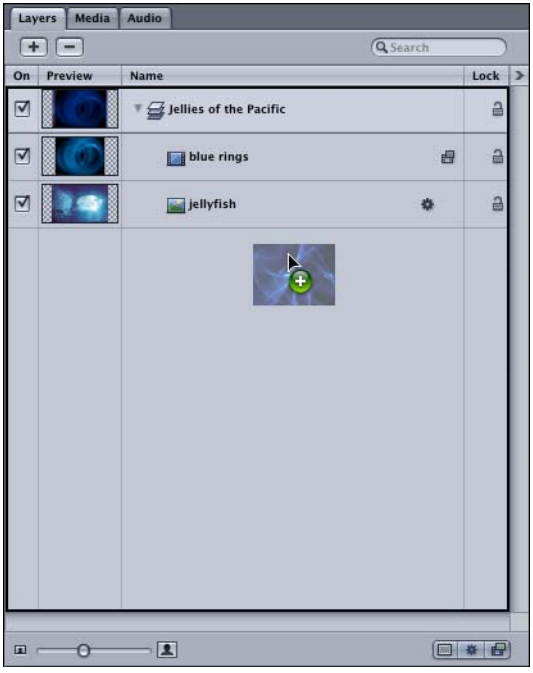
Any media you have dragged to the Canvas from the Library (or imported by choosing File > Import) appears in the Layers tab. You can also drag media directly to the Layers tab.

To add media directly to the Layers tab:

1. In the File Browser or Library, select the file you want to import.
2. Drag the file to the Layers tab, and do one of the following:
   - To add the file to an existing layer, position the file over the layer. When a black outline appears around the layer in the list, release the mouse button.

The object is added as the topmost object in that layer.

- To add the file to a new layer, position the file over the lower, empty portion of the Layers list. When a black outline appears around the whole Layers list, release the mouse button.



- To add the file in between the existing objects of a layer, position the file over the two existing objects. When the position indicator appears, release the mouse button.

To swap media in the Layers tab:

1. In the File Browser, select the file you want to use to replace the existing object.
2. Drag the file to the Layers tab, and position the file over an existing object. When a black outline appears around the object, release the mouse button.

The object is replaced with the new file.

Note: Media that is replaced in the Layers tab is not replaced or removed from the Media tab.

Selecting Layers and Objects

You can select individual or multiple objects and effects in the Layers tab.

To select a single object:

- Click the object.

If the object selected is an image, shape, mask, or text object, a bounding box appears around the object in the Canvas. Behaviors and filters selected in the Layers tab or Timeline do not appear with a bounding box in the Canvas.

Selecting and Nudging Objects

An object (or layer) selected in the Layers tab appears highlighted in blue. An object selected in the Canvas appears highlighted in gray in the Layers tab. In both cases, the selected object has a bounding box in the Canvas. Once you have selected an object in the Layers tab, you can nudge the object (in one-pixel increments) in the Canvas by pressing **Command** and the **Up/Down/Left/Right Arrow** keys. For example, to nudge two objects after they are selected in the Layers tab, press the **Command+Up/Down/Left/Right Arrow** keys to nudge the objects in the Canvas. To nudge the object in 10-pixel increments, press **Shift** with the **Command** and arrow keys.

To select the object above the currently selected object in the list, press the **Up Arrow**. To select the object below the currently selected object, press the **Down Arrow**.

Note: The arrow keys are also used to step through the frames of your project. Press the **Left Arrow** (or **Page Up**) to move back a single frame or press the **Right Arrow** (or **Page Down**) to advance a single frame. There are several keyboard shortcuts for the transport controls and additional frame navigation in the Mark menu.

To select multiple objects, do one of the following:

- To select consecutive objects, drag in the empty space between the thumbnail preview and the object icon and name. You can also press **Shift** and click the uppermost and lowermost object you want in the list.
- Press **Shift** and select the objects.
- To select objects that are not consecutive, press **Command,** then select the objects.

Note: When a layer is selected, all objects within the layer are selected, and a single bounding box appears around that layer's objects in the Canvas.

To jump selections:

- Once an object is selected, press the **Up Arrow** and **Down Arrow** keys to select objects above or below that object in the list.

The selected objects update in the Canvas.

Reordering Layers and Objects

In the Canvas, layers that are arranged higher up in the list appear in front of the lower layers. The same is true for objects—the objects at the top of the list appear in front of objects at the bottom. You can reorder the objects in your project in the Layers tab or in the Timeline Layer list.

To reorder an object or layer:

- In the Layers tab, click the name of the object or layer and drag up or down in the list. When the position indicator appears where you want to place the object or layer, release the mouse button.

Note: To move multiple objects, **Shift**-select the objects (or drag downward in the empty area immediately to the left of the object name), and drag up or down in the list.

If an object that is reordered in the list has applied behaviors or filters, the behaviors and filters are moved with the object.

To move an object beneath an object with an applied behavior or filter:

- In the Layers tab, click the name of the object or layer and drag up or down in the list with the pointer to the left of the behavior or filter icons. When the position indicator appears where you want to place the object or layer, release the mouse button.

To create a new layer by reordering an object:

- In the Layers tab, click the name of the object or layer and drag up or down in the list with the pointer to the left (slightly more to the left than when moving an object beneath an object with applied effects) of the icons. When the position indicator appears with the "+" sign where you want to place the object or layer, release the mouse button.

As shown in the following image, a new layer is created from the repositioned object.

Turning Layers and Objects On or Off

You can turn layers and objects on or off in the Layers tab. An object that is turned off is invisible to the composite. Objects that are turned off are not rendered in your final project.

To turn an object on or off:

- In the Layers tab, click the activation checkbox.

  A checkmark in the box indicates an active object.

  Note: You can also enable and disable masks, filters, and behaviors by toggling their activation checkboxes. If a layer has some objects turned on, and some turned off, the checkbox shows a dash instead of a checkmark.

Locking and Unlocking Layers and Objects

To prevent an object or layer from being further modified, you can enable its lock control in the Layers tab.

To lock and unlock a layer or object:

- In the Layers tab, click the lock icon for the object you want to lock or unlock.

  In the Canvas, a red line appears around the edge of a locked object.

Unlocked

Locked

Renaming Layers and Objects

When files are imported, Motion uses the filename as the object or layer name. You can rename the objects in the Layers tab.

To rename a layer or object:

1. In the Layers tab, double-click the name of the object.

   The text field becomes active (appears highlighted).

2. Type the new object name, then press **Return**.

Copying, Duplicating, and Deleting Objects

You can copy, duplicate, and delete layers and objects in the Layers tab using the Edit menu, the shortcut (**Control**-click) menu, or shortcut keys. You can also copy objects in the Canvas.

To copy and paste an object (or layer):

1. In the Layers tab (or Canvas), select the object and do one of the following:

   - Choose Edit > Copy (or press **Command+C**).
   - **Control**-click the object, then choose Copy from the shortcut menu.

   Note: To quickly create an instance of an object, you can press **Option** and drag the object in the Canvas. Any behaviors, filters, or keyframes applied to the object are also copied.

2. Select the new layer in which you want to paste the object, then do one of the following:

   - Choose Edit > Paste (or press **Command+V**).
   - **Control**-click, then choose Paste from the shortcut menu.

Note: If you do not select another layer to paste the object into, the object is pasted into its original layer.

Use the Edit menu, the shortcut (**Control**-click) menu, and the Canvas for additional Duplicate, Cut, and Delete commands. In addition to the Layers tab, you can also copy, duplicate, and delete objects in the Canvas and Timeline. Deleting an object (an audio file, image, or image sequence) from any of these locations does not delete the associated media file from your project. To permanently remove a media file from your project, you must delete it from the Media tab.

Grouping Objects

You can group multiple objects in the Layers list. Grouping objects creates a new layer within the layer that contains the nested objects. When behaviors, filters, and transforms are applied to a layer created by grouping, all objects within the layer are affected. You can also expand the layer and apply effects to its individual objects.

To group objects in the Layers list:

1 Select the objects that you want to group.

Selected objects prior to grouping

2 Choose Object > Group (or press **Command+Shift+G**).

The grouped objects are nested into a layer within the original layer. The new layer is named "Layer" by default.

The grouped objects are nested into a new layer.

Note: You can also group layers. When two or more layers are grouped, a new layer is created that contains the original layers. You cannot group objects from different layers.

To ungroup grouped objects:

- Choose Object > Ungroup (or press **Command+Option+G**).

Changing Blend Modes and Opacity

Like filters, blend modes are one of motion graphics artists' best friends. However, while filters are the kind of friends who will share a dinner and a good story with you (as long as you buy), blend modes are the kind of friends who show up on moving day. Blend modes affect the way images in a stack are combined, and can create a completely new look for a composite with little expense in processing time. Using blend modes with two of the same image (one below the other in the Layers list) can give a dull image an immediate face lift, as shown in the following images.

Normal blend mode

Overlay blend mode

Multiply blend mode

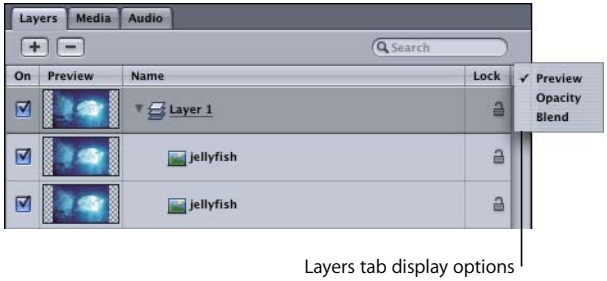
The default blend mode is Normal. An object with a Normal blend mode above another object in the list merely sits over that image with its normal colors. When a different blend mode is applied to the upper object, the color pixels in the top image are blended with the lower image in a certain way. For example, if the upper image is set to the Add blend mode, the red, green, and blue (RGB) values of the upper image are added to the RGB values of the underlying image. The resulting image is usually much brighter than the original. An image set to the Stencil Alpha blend mode creates a stencil using the image's alpha channel.

The Layers tab contains controls for adjusting the opacity and blend modes of layers and objects. The Opacity and Blend Mode controls are not displayed by default.

Note: The Opacity and Blend Mode parameters (including animation controls) for an object also appear in the Inspector > Properties tab, as well as the Dashboard.

To show the Opacity and Blend Mode controls:

1 In the Layers tab, click the Show Columns button (the ">" button that is adjacent to Lock).



2 Make one of the following choices from the pop-up menu:

- Choose Opacity to show the Opacity controls.

  The Opacity parameter is added to the Layers tab.

- Choose Blend to show the Blend Mode button.

  The Blend Mode button is added to the Layers tab.

Note: Use the Preview option in the Layers tab to show and hide the object thumbnail.

To adjust the object opacity:

- Drag the Opacity slider.

To select a blend mode:

- Click the Blend Mode button and choose a mode from the pop-up menu.

Note: You can also **Control**-click an object in the Layers tab or Canvas and choose a blend mode, or choose Object > Blend Mode > (blend mode).

The objects within a layer can be set to different blend modes, and the layer itself can also be set to a blend mode. For more information, and for a full description of all blend modes, see Chapter 3, "Basic Compositing," in *Motion Help*.

Transforming Objects and Layers

The "motion" part of motion graphics involves transforming objects in compelling, artistic, or even downright silly ways. There are several ways to transform objects in Motion—you can apply behaviors to automatically transform and animate objects, you can keyframe transformations, or you can work with a combination of behaviors and keyframes.

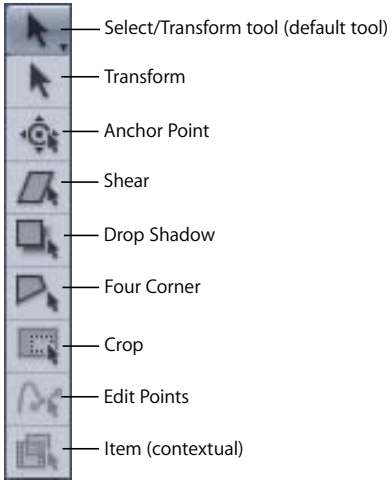
The following section discusses the most basic way to transform objects and layers—using the onscreen controls in the Canvas. For information on using the onscreen controls in conjunction with the Record button to create animations, see "Using Keyframes in Motion" on page 103.

Onscreen Controls

You can choose the onscreen control mode in the Toolbar or the object shortcut menu (**Control**-click an object) in the Canvas.

To select a transform mode in the Toolbar:

1. In the Toolbar, click and hold the Select/Transform tool to display the transform modes.



2 Select a transform mode.

The object transform modes are also available in the onscreen controls in the Canvas. To display the modes, **Control**-click a selected object, then choose an object transform mode from the shortcut menu.

For all of the following transforms, ensure that the object is selected (a bounding box appears around a selected object in the Canvas). You can select an object in the Layers tab or directly in the Canvas.

Note: The object parameters for all of the following controls (move, rotate, and so on) also appear in the Inspector > Properties tab. Although the values are displayed in the Canvas at the pointer while transforming an object, it is a bit easier to specify exact values in the Inspector. For example, to shear an object precisely 10.25 percent in X, go to the Shear parameter in the Properties tab, and enter that value in the X value field.

To select an object in the Canvas:

1 In the Toolbar, click the Select/Transform tool (or press **S**).

2 In the Canvas, click the object that you want to transform.

Note: To select multiple objects in the Canvas, **Shift**-click or drag-select the objects.

A bounding box appears around the selected object in the Canvas. In the following image, two objects are selected, so two bounding boxes appear.

Note: You can also select objects in the Timeline. For more information, see "The Timeline" on page 97.

To move an object:

- Click within the bounding box and drag the object. Do not click a bounding box handle, or you resize the object.

Note: To lock the movement of the object to the X or Y axis, or to 90-degree angles, press **Shift** while you drag the object. To lock the movement of multiple objects, first select the objects, release the mouse button, click one of the selected objects, then press **Shift** and move the objects.

To rotate the object:

- Drag the rotation handle.

Note: To rotate the object in 45-degree increments, press **Shift** while rotating the object.

To scale the object, do one of the following:

- To scale in X, drag a center left or right handle.
- To scale in Y, drag a center upper or lower handle.
- To scale in X and Y, drag one of the corner handles on the bounding box.

Note: To scale proportionally, press **Shift** while dragging any of the handles. To scale around the center of an object, press **Option**.

To move the anchor point of an object:

1. Do one of the following to select the Anchor Point mode:
   - Click and hold the Select/Transform Tool, then choose the Anchor Point mode.
   - In the Canvas, **Control**-click the object, then choose Anchor Point from the shortcut menu.
2. Drag the anchor point to the new position.

Note: The anchor point of an object is the point around which an object rotates, as well as the point where an object is attached to an animation path.

To shear an object:

1. Do one of the following to select the Shear mode:
   - Click and hold the Select/Transform tool, then choose the Shear mode.
   - In the Canvas, **Control**-click the object, then choose Shear from the shortcut menu.
2. Shear the object:
   - To shear in X, drag either of the upper or lower handles.
   - To shear in Y, drag either of the right or left handles.

To add a drop shadow to an object:

1. Do one of the following to select the Drop Shadow mode:
   - Click and hold the Select/Transform tool, then choose the Drop Shadow mode.
   - In the Canvas, **Control**-click the object, then choose Drop Shadow from the shortcut menu.

2 To edit the shadow Blur and Opacity parameters, use the object Dashboard. To edit all shadow properties, including color, use the Properties tab in the Inspector.

The shadow is applied to the object as a whole. If the object contains an alpha channel, the alpha channel is respected by the drop shadow.

To use the Four Corner mode:

1 Do one of the following to select the Four Corner mode:

- Click and hold the Select/Transform tool, then choose the Four Corner mode.
- In the Canvas, **Control**-click the object, then choose Four Corner from the shortcut menu.

2 Drag one of the four-corner control points.

To crop the object:

1 Do one of the following to select the Crop mode:

- Click and hold the Select/Transform tool, then choose the Crop mode.
- In the Canvas, **Control**-click the object, then choose Crop from the shortcut menu.

2 Drag one of the crop control handles.

Note: Once an object is selected, press **Tab** to quickly scrub through the transform modes. Once a transform mode is active, such as Shear, pressing **S** does not select the standard Select tool—press **Shift+S** to return to the standard Select tool. This is because the transform modes are options for the Select/Transform tool.

Aligning Layers and Objects

There are several tools you can use to help you align and arrange objects in the Canvas. These tools include Dynamic Guides, Rulers and Guides, the Canvas Grid, and the alignment commands in the Object menu.

The following table briefly describes the alignment tools in the View options.

Canvas View menu	Function
Grid	Displays a grid in the Canvas. You can change the grid color and spacing in the Alignment section of Canvas Preferences.
Guides	Enabled by default, allow you to drag out and manually position a horizontal or vertical guide. To create a guide, the Rulers must also be enabled in the View menu. Once Rulers are displayed, click in the ruler area, then drag toward the Canvas to create the guide. Once your guides are created, you can disable the Rulers and continue to move the guides. You can change the guide color in the Alignment section of Canvas Preferences.
Dynamic Guides	Enabled by default, the Dynamic Guides appear automatically as you drag an object in the Canvas. When working with a single object, the guides indicate alignment with the center and edges of the Canvas. When working with several objects, the guides indicate when those objects align with each other. You can change the Dynamic Guide color in the Alignment section of Canvas Preferences.
Rulers	Displays rulers along two sides of the Canvas. The ruler measure is in10-pixel increments. You can change the position of the Rulers in the Alignment section of Canvas Preferences.

While the Canvas Guides are useful for manually positioning objects in your project, the Object menu contains commands to automatically align objects. You can align the left, right, top, and bottom edges of objects, as well as their horizontal or vertical centers. You can also distribute the centers and edges of objects.

To use the Object menu alignment options:

1. Select the objects to be aligned.
2. Choose Object > Alignment, then choose an alignment option from the submenu.

The Playground

2

The playground lets you explore the possibilities of your project. Throw objects about, or easily create complex motion with simulation behaviors. Add filters for that extra wow factor, or combine filters and behaviors for unique new looks. Let your mind go, and your motion graphics project will follow.

About Behaviors

Behaviors are the heart of Motion. With just a drag and drop, you can quickly and easily create sophisticated motion effects or complex simulated interactions between multiple objects in real time—without creating any keyframes.

Behaviors animate an object by automatically generating a range of values for that object's parameters. For example, an object with an applied Grow/Shrink behavior automatically scales the object up or down based on the rate you set. You can adjust the effect of a behavior using simple, graphical controls in the Dashboard, or dig into all controls for the behavior in the Inspector.

Think of behaviors as applying a rate of change to the parameters of an object over the duration of that object. In turn, think of keyframes as setting specific values for the parameters of an object at specific points in time.

The ideal use for behaviors is creating fluid motion graphics that do not require specific timing. For objects in a project that call for precise timing, or to "land" in a very specific area of the screen, use keyframing. For more information, see "Using Keyframes in Motion" on page 103.

With the exception of the Text Sequence behaviors, the duration of a behavior is the length of the object to which it is applied. Although behaviors are designed for more flexible graphics, you can shorten or stop the effect of the Basic Motion behaviors (such as Grow/Shrink and Throw) by shortening their durations in the Timeline. For more information on editing behaviors in the Timeline, see "Modifying Behaviors in the Timeline" on page 102.

Although the application of most behaviors is elementary, their power is quite sophisticated. Understanding the differences between the five Motion behavior types is essential in mastering their use.

Basic Motion behaviors: Among the simplest behaviors in Motion, Basic Motion behaviors animate specific parameters of the object to which they are applied. Some affect position, such as Throw, while others affect opacity, such as Fade In/Fade Out.

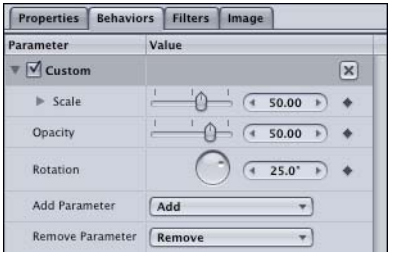
Simulation behaviors: The Simulation behaviors perform one of two tasks: Some Simulation behaviors, such as Gravity, animate the parameters of an object in a way that simulates a real-world phenomenon. Other simulation behaviors, such as Attractor and Repel, affect the parameters of one or more objects surrounding the object to which they are applied. These behaviors allow you to create some very sophisticated interactions among multiple objects in your project with minimal editing. Like the Basic Motion behaviors, Simulation behaviors also affect specific object parameters. For example, Gravity affects the position parameter of an object, at a rate you define.

Unlike Basic Motion behaviors, you cannot stop or change the motion of a Simulation behavior in the Timeline. However, you can affect the rate of a Simulation behavior by changing its duration in the Timeline, as well as change the starting frame of the behavior. A handy way to remember the differences in modifying the Basic Motion and Simulation behaviors in the Timeline is that "you cannot control 'Mother Nature.'" Changing the duration of a Timeline bar for a Simulation behavior does stop the "active" force on the object, but does not stop the motion of the object. In other words, because the Simulation behaviors simulate natural effects, such as Gravity, the laws of inertia apply—an external force set the object in motion, and that object stays in motion even once the active force is no longer present. You can, of course, control Simulation behaviors using their parameters.

Parameter behaviors: Parameter behaviors can be applied to any object parameter, and their effects are limited to just that parameter. For example, you can apply the Oscillate parameter behavior to the Opacity parameter of an object to make the object rhythmically flash on and off. The same Parameter behavior can be added to different parameters, resulting in completely different effects. If the Oscillate behavior is applied to the Rotation parameter of an object, the object rocks back and forth. Parameter behaviors can also be applied to filter parameters, generator parameters, or the parameters of particle systems. If you really want to go nuts, you can apply a Parameter behavior to the parameters of other behaviors.

Notice that the Parameter behavior icon includes an image of a funnel (or a martini, depending on your mood). The funnel represents the "channeling" of individual parameters.

There is also a Custom behavior in the Parameter behaviors category, which works a bit differently from the rest of the Parameter behaviors. (There is always that one different kid in class, who later turns out to be your best friend.) The Custom behavior allows you to design your own behavior—you hand pick and keyframe a set of parameters to create a completely custom behavior. Once you have created your Custom behavior, you can name and save the behavior to use on other objects or in future projects. For more information, see Chapter 5, "Using Behaviors," in *Motion Help*.



Custom behavior with animated Scale, Opacity, and Rotation parameters

Particle behaviors: There is a single Particle behavior called Scale Over Life. When applied to a particle cell, the Scale Over Life behavior affects the rate of scale over the lifetime of the particle.

Text Animation and Text Sequence behaviors: Text Animation and Text Sequence behaviors animate the parameters specific to text titling effects. For example, the Crawl Left behavior automatically animates a text object to move across the screen from right to left, while the Type On behavior reveals a text object one character at a time. The Text Sequence behaviors allow you to create animations that move through the characters of a text object over time. For more information on using Text Animation behaviors, see "Applying Text Behaviors" on page 129.

Applying Behaviors

This section provides a quick introduction to applying behaviors to the objects in your project. These guidelines apply to the Basic Motion, Simulation, Text Animation, and Text Sequence behaviors, which you apply directly to objects in the Canvas, Layers tab, or Timeline. Once applied, these behaviors automatically animate the parameters they affect. Parameter behaviors are introduced in "Using Parameter Behaviors" on page 84.

Behaviors can be applied and modified while your project plays back, or while playback is stopped.

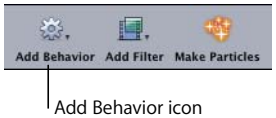
To apply a behavior to an object, do one of the following:

- From the Library stack, drag a Basic Motion, Simulation, Text Animation, or Text Sequence behavior onto an object in the Canvas, Layers tab (in the Project pane), or Timeline.

  Note: Text Animation and Text Sequence behaviors should only be applied to text objects. Although you can drag a Parameter behavior from the Library to an object, the behavior does not affect the object until you select a parameter to which you want to apply to the Parameter behavior. The best way to apply a Parameter behavior is by using the Inspector. For more information, see "Using Parameter Behaviors" on page 84.

- Select the object to which you want to apply a behavior, then select a behavior from the Library stack, and click Apply in the Library Preview area.

- Select the object to which you want to apply a behavior. Then, click the Add Behavior icon in the Toolbar and choose the behavior you want to apply.



To apply a behavior to multiple objects:

1. Select all of the objects to which you want to apply the behavior.
2. Do one of the following:
   - Choose a behavior from the Add Behavior pop-up menu in the Toolbar.
   - Select a behavior in the Library, then click Apply in the Preview area.

Note: You can also apply behaviors directly to layers in the Layers tab or Timeline. In general, behaviors applied to a layer affect all the objects nested within that layer as if they were a single object. Some Simulation behaviors, however, can be set to affect elements individually.

Once a behavior is applied to an object, use the Dashboard or the Behaviors tab to adjust the behavior parameters.

Applying Multiple Behaviors to Objects

There is no limit to the number of behaviors you can add to an object or layer in Motion. When multiple behaviors are applied to a single object, they all work together to create a final animated effect.

Each behavior applies a value range to a specific parameter of an object. When multiple behaviors are added to an object, the values generated by all behaviors that affect the same parameters are combined together to create the end result. For example, applying the Throw and Gravity behaviors to a single object results in the combined result of the Throw and Gravity behaviors affecting the position of the object.

Multiple behaviors applied to a single object appear beneath that object in the Layers tab and Timeline.

Note: Generally, you can change the stacking order of the Simulation behaviors with no effect on the animation. Changing the stacking order of other behaviors, however, does affect the result. These include many of the Parameter behaviors, such as Negate and Average, and the Snap Alignment to Motion behavior (from the Basic Motion subcategory).

Copying Behaviors From One Object to Another

Once you have applied behaviors to objects in your project, you can copy those behaviors to other objects.

Note: Although the following commands are presented in the Project pane, they can also be performed in the Timeline.

Behaviors can be cut, copied, and pasted like any other object in Motion. When you cut or copy a behavior in the Project pane, you also copy all of the current parameter settings for that behavior.

To cut or copy a behavior:

1. In the Layers tab of the Project pane, select the behavior.
2. Do one of the following:
   - Choose Edit > Copy (or press **Command**+**C**) to leave the behavior applied to the current object, so you can paste a copy to another object.
   - **Control**-click the behavior, then choose Copy from the shortcut menu.
   - Choose Edit > Cut (or press **Command**+**X**) to remove the behavior from its current object.
   - **Control**-click the behavior, then choose Cut from the shortcut menu.

To paste a behavior:

1. Select the object to which you want to paste the behavior.
2. Do one of the following:
   - Choose Edit > Paste (or press **Command**+**V**).
   - **Control**-click the behavior, then choose Paste from the shortcut menu.

The cut or copied behavior is applied to the selected object, with all its parameter settings intact.

Moving Behaviors

You can also move a behavior from one object to another in the Project pane or Timeline. You move behaviors between layers and objects in the same manner as other objects in the Layers tab or Timeline.

To move a behavior:

- In the Layers tab or Timeline Layer list, drag the behavior from one object to another.

Note: If you drag a Parameter behavior from one object to another, it is applied to the same parameter of the new object.

For more information on duplicating, removing, locking, and renaming behaviors, see Chapter 5, "Using Behaviors," in *Motion Help*.

Working With Basic Motion Behaviors

The following section provides a quick introduction to working with the Basic Motion behaviors. In the first example, an object is animated to move across the screen using the Throw behavior. In the second example, an object is animated to spin while traveling along a set path. This is accomplished using the Spin and Motion Path behaviors.

Using the Throw Behavior

The Throw behavior is one of the easiest ways to set an object in motion—an object is "thrown" in a direction and at a rate that you specify in the Dashboard or in the Inspector. Once the initial throw is applied, the object continues to glide in a straight line at a constant speed for the duration of the Throw behavior. In the following image, the lion picture is animated with the Throw behavior.

Note: Remember that since the duration of most behaviors is the length of the object to which it is applied, you can apply and manipulate behaviors while playing a project.

To use the Throw behavior:

1. Using one of the methods described above (in "Applying Behaviors" on page 64), apply the Throw behavior to an object in your project.

   The Throw behavior appears in the Layers tab and Timeline, and the Throw Dashboard appears. If the Dashboard does not appear, make sure the Throw behavior is selected, then press **D**.

2 Set the rate and direction of the Throw.

- Click in the center of the Dashboard and drag outward in the direction you want the object to move.

- The smaller the arrow, the slower the rate of the Throw. To increase the rate of the Throw once the arrow is dragged to the limit, drag the Zoom slider to zoom out of the Dashboard controls then drag again.

Once you set the direction and rate of the Throw, the projected motion path of the behavior is displayed onscreen. The motion path for a behavior is different than an animation path created by keyframing an object. A behavior's motion path helps you see what kind of movement an applied behavior creates for the object to which it is applied. With the exception of the Motion Path behavior, the behavior motion paths cannot be modified onscreen. Animation paths created by keyframing can be changed by adjusting, adding, or removing control points. For more information on keyframed animation paths, see "Creating Keyframes in the Canvas" on page 104.

Note: You can enable and disable the animation path display in the View pop-up menu located just below the right side of the Toolbar.

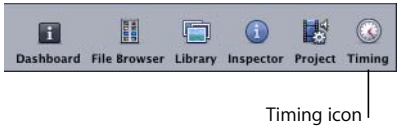
It is important to remember that applying a behavior to an object applies a rate of change to an object's parameters, and does not create editable keyframes. For fine tuning, many behaviors can be converted to keyframes. For more information, see "Converting Behaviors to Keyframes" on page 118. You can affect some of the Basic Motion behaviors in the Timeline.

Stopping the Effect of Basic Motion Behaviors

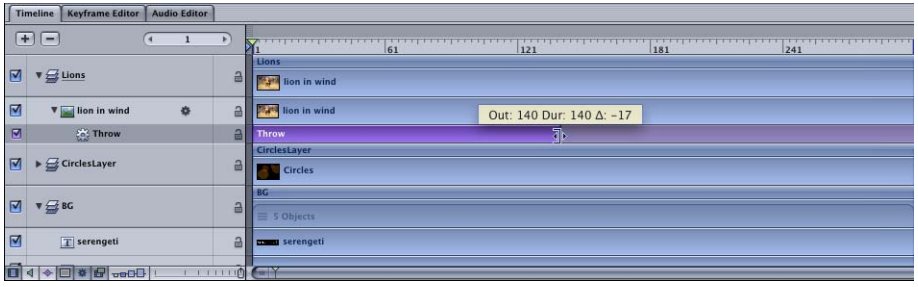
You can stop the effect of the Basic Motion behaviors in two ways: Change the duration of the behavior in the Timeline, or apply a Stop parameter behavior to the parameter that is affected by the behavior. Since the Throw behavior affects the Position parameter of the lion object, the Stop behavior is applied to the Position parameter.

To stop the Throw in the Timeline:

1 In the Toolbar, click the Timing icon (in the upper-right corner of the interface).



The Timeline appears. Layers and objects appear as blue bars, and behaviors (as well as filters) appear as purple bars. To change the duration of an object, you can drag the end (or beginning) of a bar. Since the duration of the Throw behavior is the length of the object to which it is applied, trim the Throw behavior bar to stop the Throw before the end of the object to which it is applied.



2 Click the right end of the Throw behavior and drag toward the left to the frame where you want the object to stop moving.

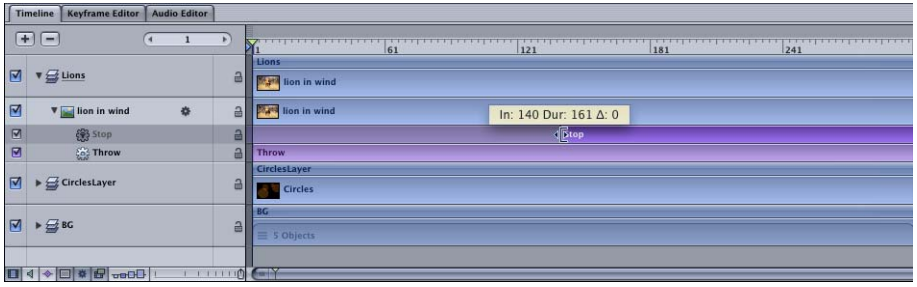
The object stops at the frame where the Throw duration bar ends.

Important: As mentioned previously, changing the duration of a behavior in the Timeline does not have the same effect on all behaviors. While you can shorten, stop, or change the rate of the Basic Motion behaviors in the Timeline, you cannot stop or change the motion of a Simulation behavior in the Timeline. However, you can affect the rate of a Simulation behavior by changing its duration in the Timeline. Remember, you cannot control "Mother Nature."

To stop the Throw using a Parameter behavior:

1. With the object selected, show the Inspector.
2. In the Properties tab, **Control**-click the Position parameter, then choose Stop from the Parameter behavior shortcut menu.

3. In the Timeline, click the left end of the Stop behavior and drag toward the right to the frame where you want the object to stop moving.



The object stops at the frame where the Stop behavior bar starts. For more information on working with Parameter behaviors, see "Using Parameter Behaviors" on page 84.

Using the Motion Path Behavior

The Motion Path behavior is an easy way to create predictable motion (without having to use keyframes) by adding an editable motion path for an object to follow. When first applied to an object, the default motion path is a straight path with control points at the beginning and end of the path. Bezier control points can be added anywhere along the path that allow you to reshape the motion path.

To use the Motion Path behavior:

1 Apply the Motion Path behavior to the object you want to animate.

The initial motion path—a straight path defined by two points at the beginning and end of the path—appears. The first point on the path is the position of the object in the Canvas at the first frame of the behavior.

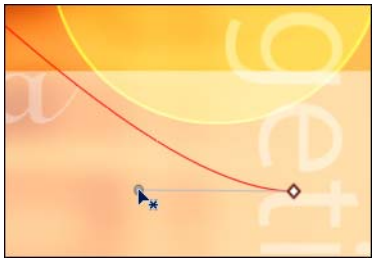
2 If the project is not playing back, click Play (or press the **Space bar**).

The object travels along the motion path. The speed at which the object travels is defined by the duration of the behavior. You can make the object travel faster by trimming the duration of the Motion Path behavior in the Timeline, as well as stop the movement of the traveling object (like the Throw behavior in the above example). You can also slow the object by extending the behavior beyond the end of the object to which it is applied.

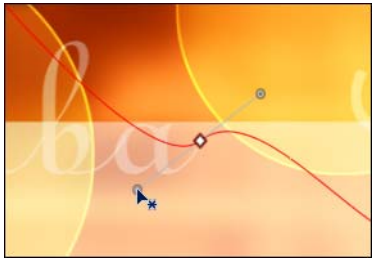
To change the shape of the path, do one of the following:

- Click either point at the end of the path to change the path's start and end location.

- To create Bezier handles at the end points, **Command**-click and drag away from the point. Flattening out the motion path at a control point slows the animation of the object as it approaches the point. This is also known as *ease*.



- To add points to the path, **Option**-click or double-click the path.

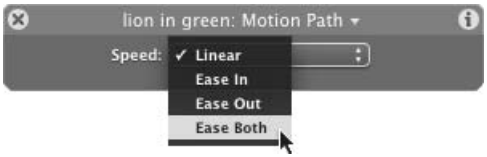


For more information on working with paths, points, and handles, see "Using Animation Paths" on page 106.

In the Motion Path Dashboard or Inspector, you can quickly create an ease in or out without having to manually adjust the shape of the path.

To change the acceleration or deceleration at the start or end of the path:

- In the Motion Path Dashboard (or Inspector), click the Speed pop-up menu, then choose one of the following:
  - To make the object travel at a constant speed on the path, choose Linear (default).
  - To make the object slowly begin its path animation, choose Ease In.
  - To make the object slowly end its path animation, choose Ease Out.
  - To make the object decelerate at the beginning and end of its path animation, choose Ease Both.



Note: When an ease option is selected, the shape of the motion path in the Canvas does not change.

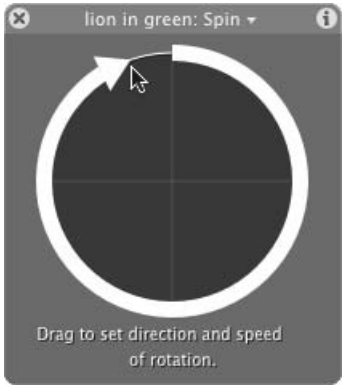
Combining Behaviors

You can add multiple behaviors to a single object. The applied behaviors all work together to create a final animated effect. Since each behavior applies a value to a specific parameter, the values generated by all behaviors that affect the same parameters are added together to create the end result.

In this section, the Spin behavior is applied to an object (from the above example) that has an applied Motion Path behavior.

To use the Spin behavior:

1. Apply the Spin behavior to the object with the applied Motion Path behavior.
2. In the Spin Dashboard, click in the black area of the circle and drag in the direction you want the object to spin.



The two applied behaviors work together so that the object spins as it travels along the motion path.

Working With Simulation Behaviors

The following section provides a quick introduction to working with the Simulation behaviors. In the first example, a group of objects is animated to fall and bounce on the bottom of the screen using the Gravity and Edge Collision behaviors. In the second example, two methods for animating a group of objects to swirl around a specific object are discussed. The first method is using the Vortex behavior, and the second method is using the Orbit Around behavior.

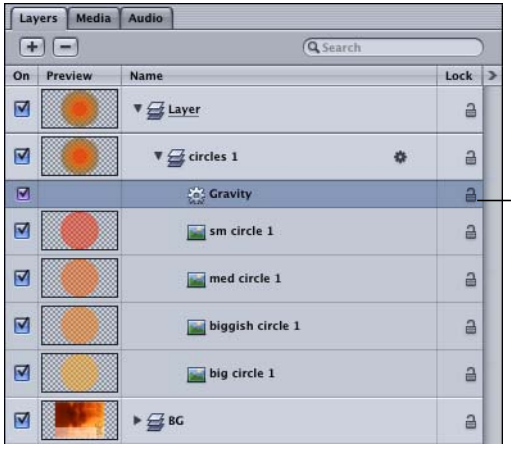
Using the Gravity and Edge Collision Behaviors

Gravity makes an object fall over time at a rate specified in the Acceleration parameter of the Dashboard or Inspector. Unless the Edge Collision behavior is also applied, the object falls off of the bottom of the screen. In this example, a group comprised of four objects (four circles) is used to illustrate the Gravity and Edge Collision behaviors.

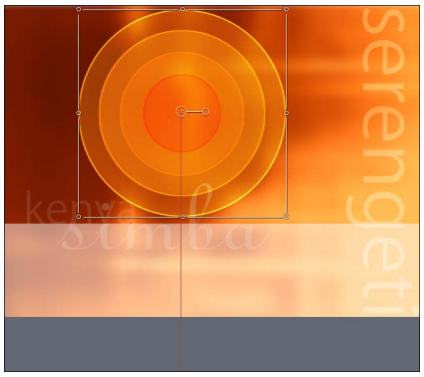
Note: Although you can apply the Simulation behaviors to single objects, their strength is in using multiple objects. Some Simulation behaviors, such as Vortex, require the existence of other objects in a project to have any effect. (There needs to be at least one object to circle around the object with the applied Vortex behavior.)

To use the Gravity behavior:

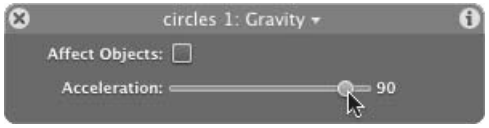
1 Apply the Gravity behavior to an object in your project. In this case, Gravity is applied to a grouped object that contains four semi-transparent, colored circles.



The motion path created by the Gravity behavior appears in the Canvas, and the object falls. Because the object is applied to the group, all objects in the group fall at the same rate. If Gravity is applied to only the small, orange center circle, for example, only the orange circle falls.



2 To increase the rate of the falling object, drag the Acceleration slider in the Gravity Dashboard or Inspector toward the right.



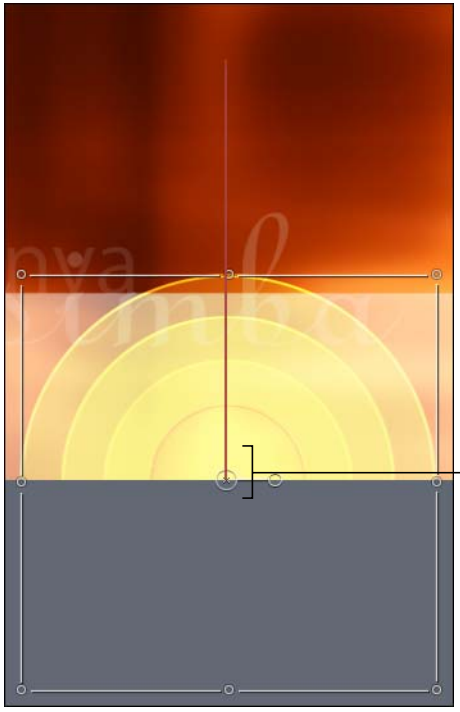
Note: You can enter a negative number in the Acceleration value field in the Inspector to make the object float upward rather than fall.

To use the Edge Collision behavior:

1 Apply the Edge Collision behavior to the object with the applied Gravity behavior.

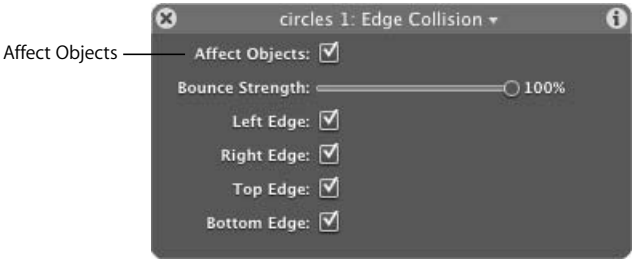
2 In the Edge Collision Dashboard (or Inspector), turn off Affect Objects.

When the Edge Collision behavior is applied to a group, and the Affect Objects parameter is disabled, the entire grouped is "bounced" off the bottom of the screen at the anchor point of the group.



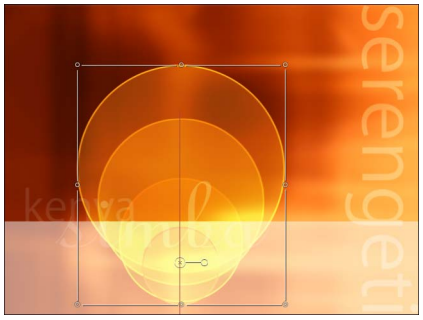
When the Edge Collision behavior is applied to a group and Affect Objects is turned off, the layer (group) bounces at the edge of the screen at its anchor point.

3 In the Edge Collision Dashboard (or Inspector), turn on Affect Objects.



Note: The Edge Collision behavior also includes edge controls for turning on and off the edge of the screen with which an object collides. By default, an object is deflected from all edges of the screen.

When the bottom edge of each object hits the lower edge of the screen, the object is deflected and bounces upward.



As the project plays, each object bounces up and down.

Other Simulation behaviors that also include the Affect Objects parameter include Align To Motion, Drag, Gravity, Random Motion, and Rotational Drag.

Using the Orbit Around and Vortex Behaviors

The Orbit Around behavior makes an object orbit around another object in a perfect circle. The parameters of the Orbit Around behavior can be modified to create a more interesting animation. The Vortex behavior is the opposite of the Orbit Around behavior—Orbit Around causes one object to orbit around another target object, whereas Vortex exerts a force on all objects surrounding the object to which the Vortex behavior is applied. The following example uses the same group of objects (circles) used in the previous example; however, the objects are repositioned in the Canvas.

The Orbit Around Behavior

You create animation using the Orbit Around behavior by specifying a target object that other objects circle around. You set the target object by dragging the object to the Object well in the Orbit Around behavior parameters.

To use the Orbit Around behavior:

1 Apply the Orbit Around behavior to the object (or group of objects) that you want to circle around a target object.

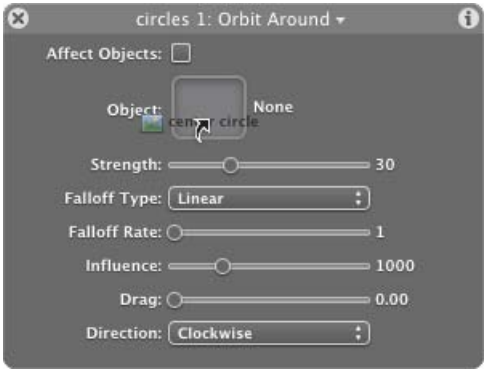
In this case, the Orbit Around behavior is applied to the group of objects (circles) in the project. The orange circle in the center of the Canvas is in a separate layer from the rest of the objects.

When the Orbit Around behavior is first applied, no animation occurs. This is because you must specify the object that the other objects orbit around. To set the target object, the object is dragged from the Layers tab to the Object well in the Orbit Around Dashboard or Inspector.

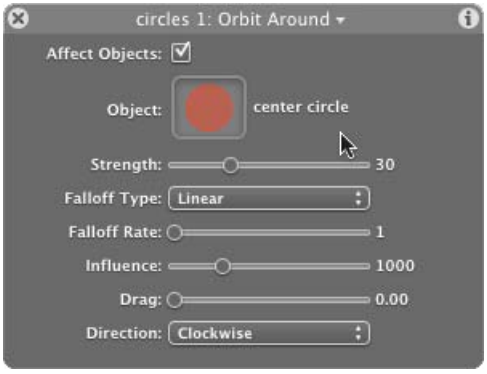
2 Do one of the following:

- In the Layers tab, click-drag the name of the object that you want the other objects to circle around, and drop it in the Object well of the Orbit Around Dashboard or Inspector.
- In the Layers tab, drag the name of the object that you want the other objects to circle around, and drop it onto the Orbit Around behavior.

Important: Dragging an object to a well may be tricky—be sure to click the object name in the Layers tab and immediately drag the object to the Object well (without releasing the mouse button). The behavior must remain active even though you are clicking another object in the Layers tab. If you click the object in the Layers tab and release the mouse button, that object is now selected, and the behavior's parameters are no longer displayed. This behavior is true of all wells, including Mask Source and Image wells. To show the Orbit Around behavior parameters again, select the Orbit Around behavior.



Drag object to Object well. The object can be dropped when the arrow appears above the well.



When the object is dropped, it appears in the Object well.

3 In the Orbit Around Dashboard (or Inspector), make sure Affect Objects is turned on.

When Affect Objects is turned on, all objects within the layer move around the target object.

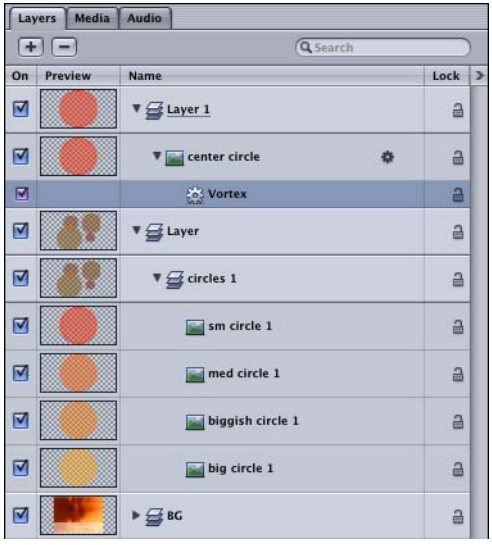
Other Simulation behaviors that also use a target object include Attracted To, Drift Attractor To, Repel From, and Spring.

The Vortex Behavior

Animation is created using the Vortex behavior by exerting a force on all objects surrounding the object to which the Vortex behavior is applied. You can specify whether All Objects, Related Objects, or Specific Objects are affected by the Vortex. The following example uses the same project as the above example.

To use the Vortex behavior:

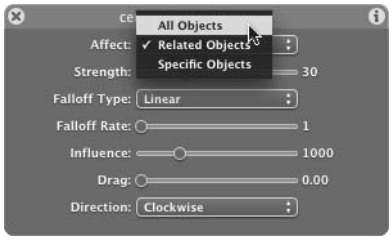
- Apply the Vortex behavior to the object that you want other objects to swirl around. In this step, the Vortex is applied to the "center circle" object in the layer above the group of circles.



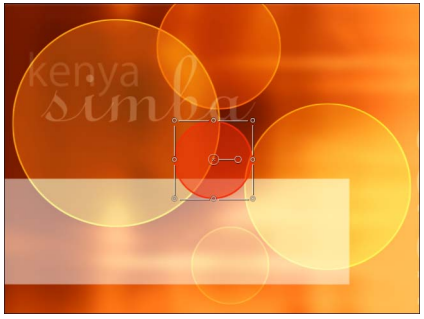
By default, Related Objects is selected in the Vortex Affect parameter. Because the circle is the only object in the layer, nothing happens. When Related Objects is selected, all objects that exist in the same layer as the object to which the Vortex behavior is applied move around the object to which the Vortex behavior is applied.

Change the default Affect parameter setting:

- In the Vortex Dashboard, click the Affect pop-up menu, then choose select All Objects.



When All Objects is chosen, all objects in the project—regardless of the layer in which they exist—are affected and move around the object to which the Vortex behavior is applied.



When All Objects is selected, all objects in the project swirl around the object with the applied behavior.

Using the Vortex behavior, there are two ways to create an animation in which only certain objects (not every object in the project) swirl around the object with the applied Vortex behavior: (1) Set the Affect parameter to Specific Objects and select each object that you want to swirl around the target object, or; (2) Move the center circle object (that has the applied Vortex behavior) into the same layer as the circle objects, and set the Affect parameter to Related Objects.

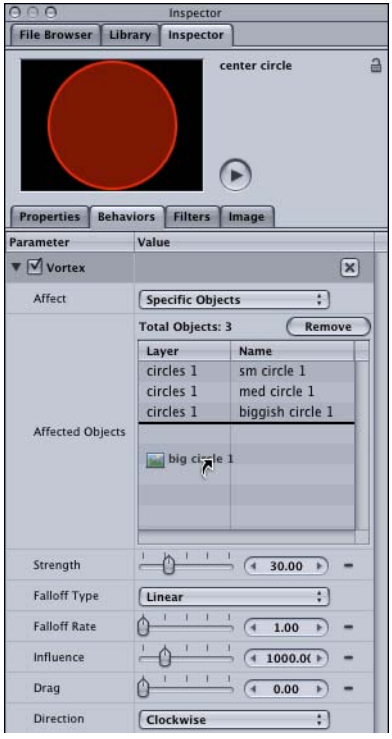
To set only the circles to vortex using Specific Objects:

1. In the Dashboard or Inspector, set the Vortex Affect parameter to Specific Objects (without moving any objects).
2. If it is not displayed, show the Behaviors tab in the Inspector.

   In the Vortex parameters, an Affected Objects list appears. To apply the vortex to specific objects, drag the objects from the Layers tab to the Affected Objects list.
3. One at a time, click-drag the objects that you want to be affected by the Vortex behavior. Like the Object wells, you can drop the object when the arrow appears above the list.

   As objects are added, the names of the object itself as well as the layer in which they exist appear in the list.

   Note: Objects from any layer in a project can be dragged to the Affected Objects list. To remove an object, select the object in the list and click Remove.



Any objects that are added to the Affected Objects list swirl around the object to which the Vortex behavior is applied.

To set only the circles to swirl using Related Objects:

1 In the Layers tab, move the object with the applied Vortex behavior into the layer that contains the objects you want to swirl around the object.

2 In the Dashboard or Inspector, set the Vortex Affect parameter to Related Objects.

Note: Other Simulation behaviors that also use the Affect parameter include Attractor, Repel, and Drift Attractor.

Behaviors vs. Keyframes

Behaviors do not add keyframes to object parameters. Instead, a behavior automatically generates a range of values that are applied to an object's parameters, which animate the object over the duration of that behavior. With the exception of the Text Sequence behaviors, the duration of a behavior is the length of the object to which it is applied.

Keyframes, however, apply specific values directly to a parameter. An animated object has at least two keyframes for a parameter, such as Rotation, at different points in time in a project. A keyframe is a point in time that records any change in the value of a parameter. The animation is created by these changes in parameter values, and can be edited in the Keyframe Editor.

By design, behaviors are most useful for creating generalized, fluid motion effects, or very complex animations. Keyframing gives you the ability to set precise parameter values at specific frames. For example, for a project that requires the characters of a text title to start with a Tracking value at frame 1 and end with a Tracking value of 100 at frame 60, you would keyframe the Tracking values at the specific frames.

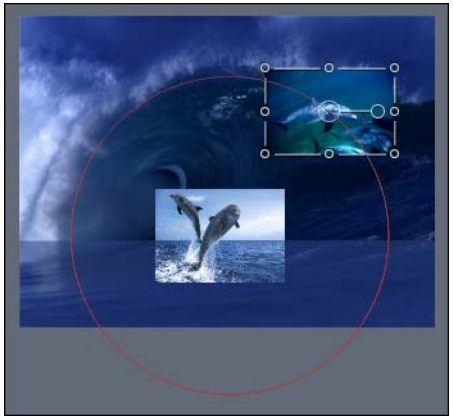
You can also combine keyframes and behaviors. For more information, see Chapter 5, "Using Behaviors," in *Motion Help*. For more information on keyframing, see "Using Keyframes in Motion" on page 103.

Using Parameter Behaviors

Parameter behaviors are very different from the other behavior categories—they are applied in a different manner, and can be applied to nearly any parameter of an object. The Basic Motion, Simulation, Text Animation, or Text Sequence behaviors affect specific object parameters (determined by the behavior). For example, Throw only affects the Position parameters of an object. A Parameter behavior can be applied to nearly any of the parameters available for an object, such as X or Y Position, Opacity, Rotation, Blend Mode, and so on. For example, you can apply the Randomize parameter behavior to the Position of an object so that it jitters nervously onscreen.

Parameter behaviors can also be applied to the parameters of filters, as well as objects belonging to particle effects. For even more variation, Parameter behaviors can be applied to the parameters of applied behaviors. Wow. For example, the following images show changes to the behavior animation path of an object when a Parameter behavior is applied to a parameter of a Simulation behavior.

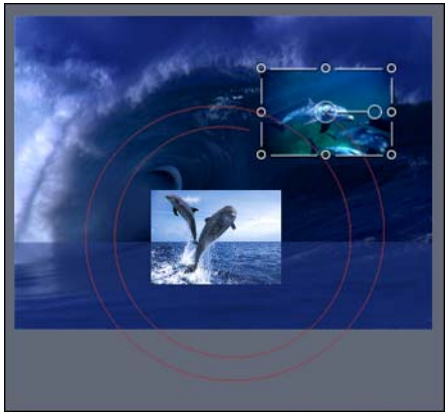
In the first example, the Orbit Around behavior is applied to the upper dolphin object, and the lower dolphin object is set as the target object. The behavior animation path appears in red and forms a perfect circle around the lower dolphin object.



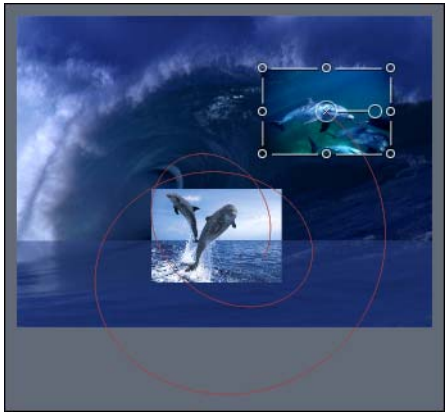
To show the animation path of a selected object, make sure Animation Path is selected in the View pop-up menu.

Unlike animation paths for keyframed objects, behavior animation paths cannot be modified directly—they are controlled by the parameters of the behavior. For information on keyframed animation paths, see "Using Animation Paths" on page 106.

In the second image, the Drag parameter of the Orbit Around behavior is adjusted in the Inspector. After the Drag parameter is modified, the circle animation path becomes a spiral.

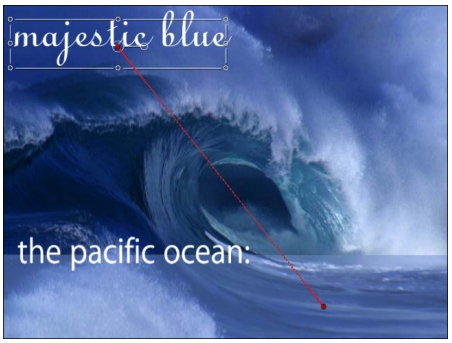


In the last image, the Oscillate parameter behavior is applied to the Drag parameter of the Orbit Around behavior. The spiral animation path becomes more irregular.

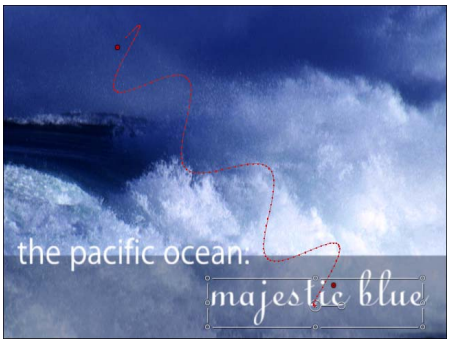


The effect of a Parameter behavior on an object depends on the parameter to which it is applied. Therefore, you must select the parameter you want to apply the effect to prior to applying the Parameter behavior.

For example, applying the Oscillate Parameter behavior to the Scale parameter makes the size of the object vary between alternate extremes, from very small to very large. As shown in the following images, if you apply the Oscillate behavior to the Position parameter of an object that is moving on a straight path across the screen, the object travels in graceful waves up and down the newly-shaped path.



Animation path before Oscillate Parameter behavior applied



Animation path after Oscillate Parameter behavior applied

Applying Parameter Behaviors

The following section briefly describes the two ways to apply Parameter behaviors to the properties of an object. The first method is to use a shortcut menu on the parameters in the Inspector. The second method is similar to applying other behaviors, in which you drag a behavior onto an object. However, once a Parameter behavior is dragged to an object, you must go into the Parameter behavior controls and select a property to which the Parameter behavior is applied. This means the first method is more efficient.

Parameter behaviors can also be applied to filter parameters and behavior parameters. For an example of applying a Parameter behavior to a filter, see "Animating Filters With Parameter Behaviors" on page 92.

To apply a Parameter behavior to an object parameter using the shortcut menu:

1. Select the object to which you want to apply the Parameter behavior.
2. In the Inspector, display the Properties tab for the selected object.

3 **Control**-click the parameter (such as Position), then choose a Parameter behavior (such as Oscillate) from the Parameter behavior shortcut menu.

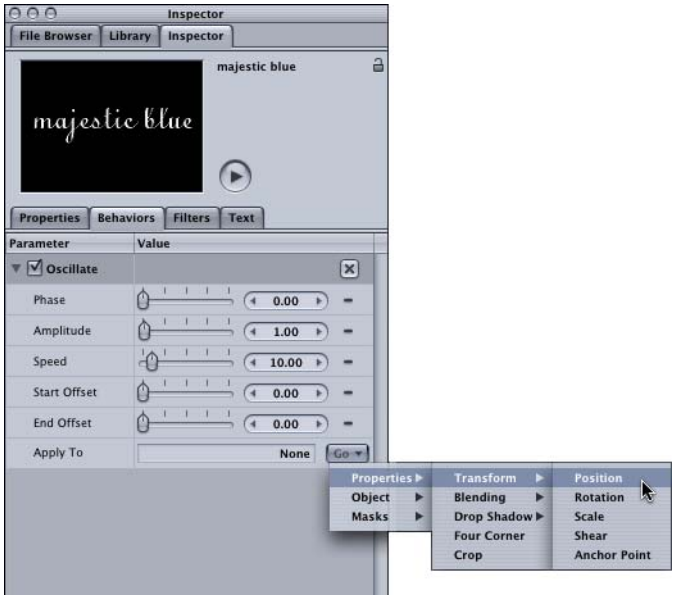
To apply a Parameter behavior to an object parameter using drag and drop:

1 In the Library, select the Parameter behavior you want to apply.

2 Drag the selected Parameter behavior to the object in the Canvas (or Layers tab).

3 In the Behaviors tab of the Inspector, expand the Parameter behavior.

4 In the Apply To parameter (the last parameter in the list), choose the property to which you want to apply the parameter from the Go pop-up menu.

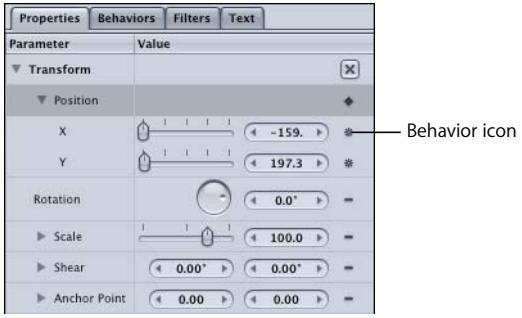


Notice in the Go pop-up menu that the Parameter behavior can be applied to any text parameter. The parameters that appear in the Go pop-up menu depend on the object to which the Parameter behavior is applied. For example, when a Parameter behavior is applied to a Gaussian Blur filter, only the Gaussian Blur parameters—Amount, Horizontal, Vertical, and Crop—can be applied to the Parameter behavior.

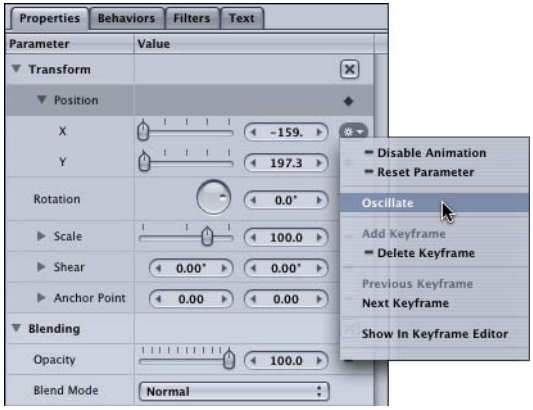
For information on removing Parameter behaviors, see "Where Parameter Behaviors Appear" on page 90.

Where Parameter Behaviors Appear

Once a Parameter behavior has been applied to an object, the small behavior icon appears in the Animation menu to the right of the affected parameter in the Properties, Behaviors, or Filters tab. This indicates at a glance that a behavior is influencing that parameter. Like other behaviors, the Parameter behaviors also appear in the Layers tab and the Timeline.



If you click the behavior icon, any applied Parameter behaviors appear in the pop-up menu. To open the Behaviors tab, select the name of the Parameter behavior in the Animation menu list.



Like other objects in Motion, Parameter behaviors can be disabled or removed.

To disable a Parameter behavior, do one of the following:

- In the Behavior tab, turn off the Parameter behavior's checkbox.
- In the Layers tab or Timeline, turn off the behavior's checkbox.

To remove a Parameter behavior:

- In the Layers tab or Timeline, select the behavior, then do one of the following:
  - Choose Edit > Delete.
  - **Control**-click the behavior, then choose Delete from the shortcut menu.
  - Press **Delete**.

Note: You can also select a behavior in the Behaviors tab, then press **Delete**.

Working With Filters

Filters are the spice of a motion graphics project's life (or were until behaviors came along). The right use of filters can turn a good project into a sublime project; their overuse can bring a good project to a grinding halt (in effect and processor speed). In other words, at times it's just the right amount of spice, and other times it's as if the lid fell off the pepper grinder and emptied the grinder's contents into the sauce. It is up to you to spice responsibly.

The Motion Library contains a suite of more than 95 filters that are divided into the following 12 subcategories:

- Blur
- Border
- Color Correction
- Distortion
- Glow
- Keying
- Matte
- Sharpen
- Stylize
- Tiling
- Time
- Video

As demonstrated in "Applying Behaviors and Filters to Objects" on page 27, filters are applied in the same manner as behaviors—by dragging or applying a filter from the Library to an object in your project, or by using the Add Filter icon in the Toolbar.

You can animate filters by creating keyframes in the Dashboard or the Inspector. A very cool but less obvious approach to use for animating filters is to apply Parameter behaviors to the filter parameters. For information on keyframing filters, see "Keyframing Filters" on page 116.

Animating Filters With Parameter Behaviors

This section provides a quick overview of applying Parameter behaviors to a filter. In this example, a Bloom filter is applied to an object and its Brightness parameter is keyframed. Then, a Randomize Parameter behavior is applied to the Threshold parameter of the Bloom filter.

To apply a Bloom filter to an object:

1. In the Library, select the Filters category, then the Glow subcategory.
2. In the stack, select the Bloom filter and drag it to an object in the Canvas.

Original lion image

Lion image after Bloom filter applied

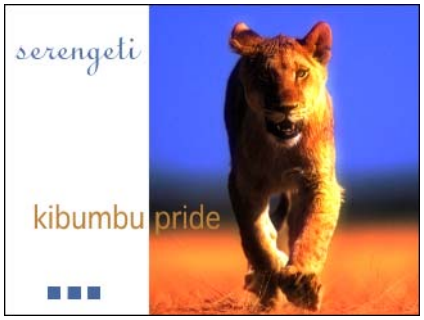
The Bloom filter creates flowering highlights in the lighter areas of an object based on a threshold.

To animate the Brightness parameter of the Bloom filter:

1. Go to the frame where you want to start the filter animation.
2. Enable Record (press **A**).
3. In the Bloom Dashboard (press **D**), set the first Brightness value. This example uses a Brightness value of 47.

Note: You can also adjust the filter parameters in the Filters tab of the Inspector.

4 Go to the last frame of the filter animation, and set the last Brightness value. This example uses a Brightness value of 56.



5 Play the project.

The image brightens over the duration of the animation.

6 Disable Record (press **A**).

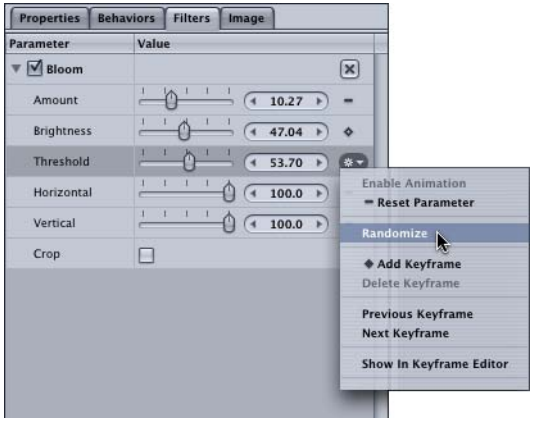
To apply a Parameter behavior to the Threshold parameter of the Bloom filter:

1 In the Filters tab of the Inspector, select the Threshold parameter of the Bloom filter.

2 **Control**-click the Threshold parameter, then choose Randomize from the Parameter behavior shortcut menu.

A behavior icon appears on the Animation menu of the Threshold parameter.

3 Click the behavior icon (Animation menu), then choose Randomize.



The Behaviors tab is selected and the Randomize parameters are displayed.

4 Adjust the Randomize settings.

5 Click the Filters tab and play the project (press the **Space bar**).

Rather than a smooth transition between the Brightness values, the Threshold values are randomly animated. In the Filters tab, you can see the keyframed Brightness value increasing, and the Threshold behavior values changing as a result of the Parameter behavior.

Important: For optimal processing speed, keep in mind that applying a filter to a layer containing several objects is more efficient than applying filters to each object within a layer individually. Also, importing media at its intended size helps reduce processing speed. For example, if you import a large image, scale the image down, and apply filters and behaviors to the scaled object, Motion must process the scaling information in addition to the filters and transforms. To save processing time, import the images as close to the size required by your project whenever possible.

Note: For information on minimum and optimum hardware configurations, see *Installing Your Software*.

Your No. 2 Pencil

3

Sharpen those pencils! It's time to get serious with the full-featured Timeline and flexible keyframing options that allow you to create and edit precision animation in a friendly, clean curve editor.

Using the Timeline

Although you can create an entire motion graphics project without ever peeking at the Timeline, it becomes an essential tool in modifying the timing and position of elements in relation to each other, as well as editing the duration and rate of many behaviors. Many of the features ordinarily reserved for nonlinear editing software are available in the Motion Timeline.

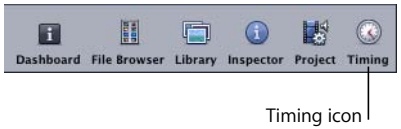
While the mini-Timeline is handy for manipulating a single object or layer at a time, the full Timeline gives you a global view of all elements (layers, objects, behaviors, and so on) in your project, and the position and duration of those elements over time. Think of the Timeline as the place where you rule over your project—you move the elements in time, in stacking order, and in duration, as well as add or remove elements.

The Timeline allows for easy, graphical editing. You decide whether objects, audio, keyframes, masks, behaviors, filters, or a combination of elements is displayed in the Timeline. The Timeline contains two components: the Layer list (to the left) and the Timeline itself (to the right).

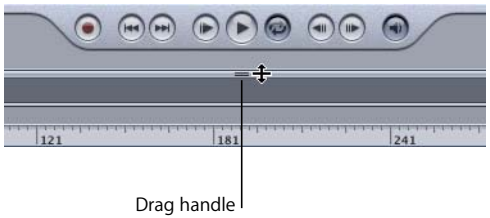
The Timeline, located in the Timing pane, is not displayed by default.

To display the Timeline, do one of the following:

- In the Toolbar, click the Timing icon (in the upper-right corner of the interface).



- Drag the drag handle directly below the Play button in the transport controls.



- Choose Window > Layouts > Cinema.
- Press **F6.**

  Cinema layout is ideal for use with Cinema displays. This layout moves the Inspector to the right side of the interface and shows the Timeline and Layers tab. If the workflow on a certain project requires that you spend a lot of time in the Timeline and Inspector, this is the recommended layout. This choice is not available unless your computer is attached to an Apple Cinema Display.

  Note: To change interface layouts, choose Window > Layouts, then choose Standard, Alternate, or Cinema from the submenu. You can also create and save your own layout arrangements. For more information, see Chapter 1, "Getting to Know Motion," in *Motion Help*.

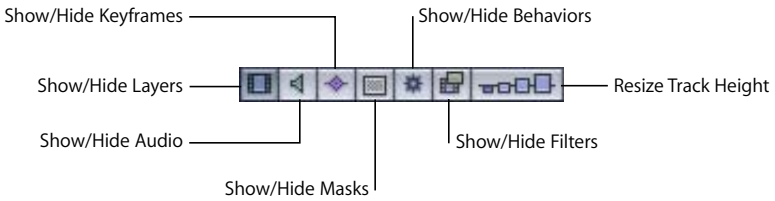
The Timeline Layer List

The Timeline Layer list mirrors the Layers list in the Project pane. Like the Layers list, you can select, reposition, lock, group and ungroup, and rename objects and layers. You can also add and delete layers.

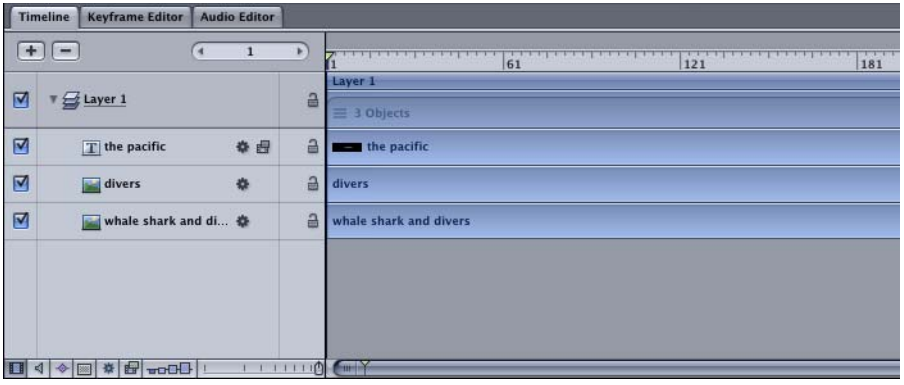
Also like the Layers list, the filter, behavior, and mask icons appear next to the object name in the list.

The Timeline

In the Timeline, each object is represented by a colored bar that sits on a gray, horizontal track. The object type is identified by the color of its bar. You can show or hide the tracks for layers and objects or audio, as well as masks, behaviors, and filters applied to those layers and objects. You can also display keyframes in the Timeline, which can be moved or deleted. To add keyframes or modify the keyframe curves, use the Keyframe Editor.



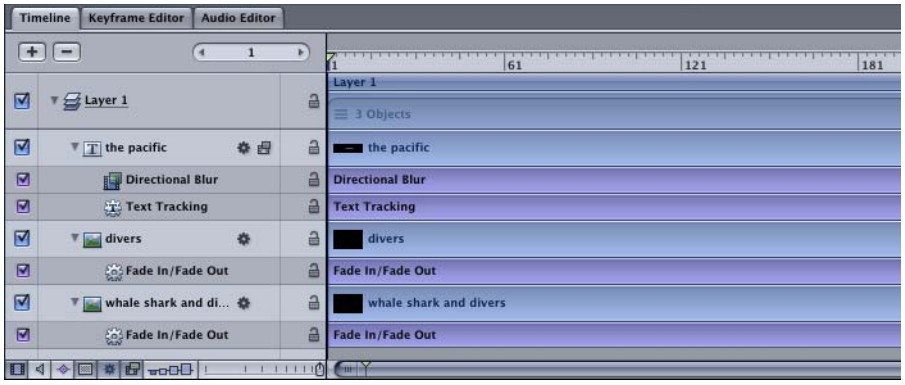
The following images show the Timeline for a project that contains one layer comprised of three objects—two images and one text object (at the top of the list). In the first image, only the Show Layers option is enabled, which displays any layers and objects in a project. The bar color for layers and objects is blue. When selected, the object is a darker blue.



Each layer in a project has a representative layer track, which can be used to move or trim all of the objects within that layer. For layers that contain multiple overlapping objects, a layer icon and the number of objects in that time region of the layer appear on the layer track.

Note: In the mini-Timeline, only the overlap is shown, not the layer icon and number of objects.

In the second image, the Show Behaviors and Show Filters options are enabled. Each image has an applied behavior (Fade In/Fade Out), and the text object has an applied text behavior (Text Tracking) and filter (Directional Blur). The bar color for behaviors and filters is different.



Note: You can modify the way objects are displayed in the Timeline in the Appearance group of Motion Preferences.

Navigating the Timeline

To zoom in and out of the Timeline, you can use the Zoom control or the Zoom slider. Both allow you to zoom in and out of the Timeline horizontally. The more you zoom in, the less time (frames) is displayed. As you zoom out, more time is displayed. When you use the Zoom control, the zoom is centered on your current frame.

Editing Objects and Layers

Use the Timeline to move objects and layers in time, as well as to slip or trim the objects to better match the timing of other objects in your project. The terms *move*, *trim*, and *slip* describe the different ways to edit Timeline objects.

Move: When you move an object in a track, the location of the object in the track (in time) is changed without affecting its content or duration.

Trim: When an object is trimmed, the duration of the object is changed, without affecting its location in the track or its content. Trimming an object is the equivalent to setting new In or Out points for an object.

Slip: When an object is slipped, the content of the object is changed without affecting its location in the track or duration. In other words, a slip allows you to use a different portion of a clip without changing its duration or location in time. An object can only be slipped after the object has been trimmed. Since there is no footage, behaviors and filters cannot be slipped.

To move an object:

- In the Timeline, drag an object track to the left or right.

  As you drag, the new In and Out points of the clip appear above the pointer. The triangle adjacent to the In and Out values represents Delta (the amount of change in the edit).

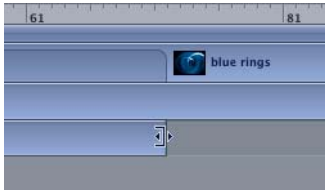
Note: To snap to other objects in the Timeline, press **Shift** while dragging.

There are two ways to trim an object in the Timeline: You can drag an end of an object's bar in the Timeline to set an In or Out point, or you can use the Mark menu.

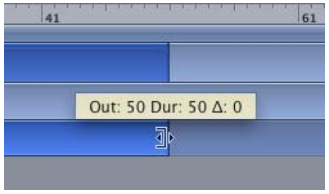
To trim an object by dragging its bar in the Timeline:

1. Position the pointer at the beginning or end of the object's bar you want to trim.

   The pointer changes to the Trim tool.



2. Drag the end of the bar until it reaches the frame where you want the clip to begin or end.



To trim an object by setting the In or Out point:

1. Select the object you want to trim.
2. Move the playhead to the frame of the new In or Out point.
3. Choose Mark > Mark In (or press **I**) to set a new In point or choose Mark > Mark Out (or press **O)** to set a new Out point.

   The clip's duration is trimmed to the new In and Out points.

To slip an object:

1. Position the pointer above the object you want to slip, and press **Option**.

   The pointer changes to the Slip tool.

2. Drag the object to the left or right.

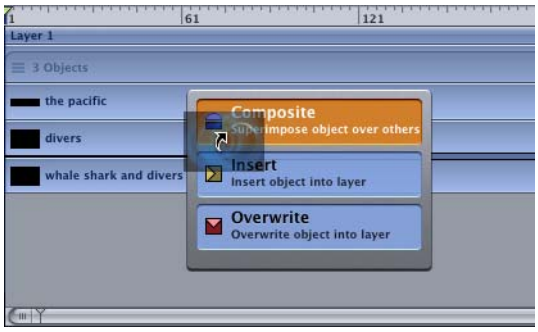
   When you drag to the right, the frames are replaced with a section from later in the source clip. When you drag to the left, the frames are replaced with a section from earlier in the clip.

   For more information on editing, navigating, and creating markers in the Timeline, see Chapter 4, "Using the Timeline," in *Motion Help*.

Adding Media to the Timeline

Like the Layers tab or the Canvas, you can add media to your project in the Timeline. When media is dragged to the Timeline, a drop menu appears that contains options that specify how the new files are placed in the project. Like the mini-Timeline, if multiple objects are dragged to the Timeline, a drop menu appears that contains the Composite and Sequential options.

If you drag a single object to the Timeline, different drop options appear when you drag the file over a layer track, or within a layer track. If you drag to the layer track, the drop options are Composite, Insert, and Overwrite. If you drag to an object within a layer, the Exchange option is added to the drop options.



Note: Like the Layers tab in the Project pane, you can only perform a composite (create a new layer or add an object to a layer) or replace when a file is dragged to the Timeline Layer list.

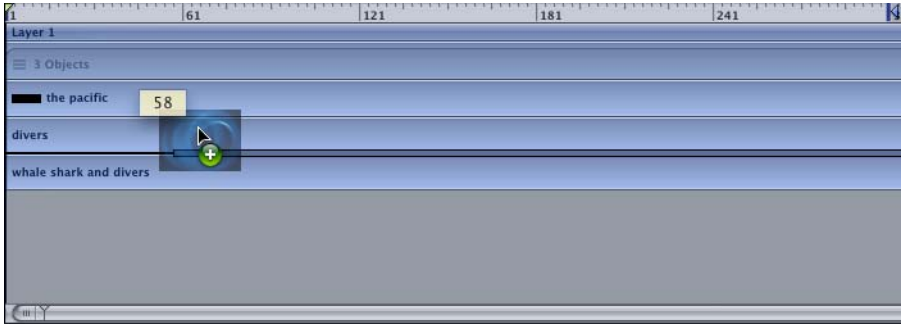
Inserting Media

The following example discusses the Timeline's drop menu Insert option.

To insert an object:

1. In the Library (or Media tab), select the object.
2. Drag the object to the Timeline tracks area.

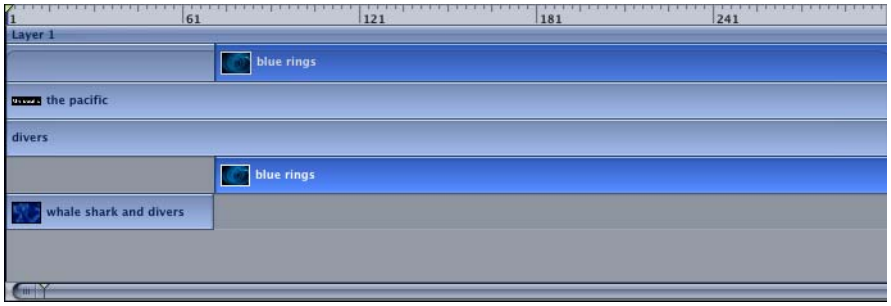
   As you drag, the current frame number is displayed at the pointer.



3. When you reach the frame where you want the new object to start, stop and hold down the mouse button.

   The drop menu appears.
4. Choose Insert.

The new object is inserted into the track. The original object bar is split into two bars, and the frames that follow the inserted object are pushed out later in time.



For more information on using the drop menus, see Chapter 4, "Using the Timeline," in *Motion Help*.

Modifying Behaviors in the Timeline

The Timeline can be an important tool for modifying behaviors. Like objects, behaviors appear as colored bars in the Timeline, and can be moved and trimmed to define new start and stop points for the behaviors. With the exception of slip, the same controls that are used to edit objects and layers in the Timeline are used to edit behaviors. For information on editing objects in the Timeline, see "Editing Objects and Layers" on page 98.

When a behavior is applied to an object, it defaults to the duration of the object to which it is applied. For example, when the Grow/Shrink behavior is applied to an object (and set to Grow), the object scales up continually from the first frame of the object to the last frame of the object. To change the timing of the behavior's effect on the object, adjust the duration of the behavior in the Timeline. For example, you can trim the Grow/Shrink behavior bar so that the grow does not take effect until frame 30.

To change the default duration of a behavior:

1. In the Timeline, position the pointer at the In point of the behavior.
2. When the pointer changes to the Trim tool, drag the bar toward the right to the frame in which you want the behavior to start.

   The behavior does not take effect until the In point of the behavior.
3. Trim the Out point of the behavior by dragging toward the left, to the frame in which you want the behavior to end.

   The behavior's effect stops at the Out point.

Note: To change the rate of the Grow/Shrink behavior, use the controls in the Dashboard or the Inspector.

Important: You can trim the Out point of the Basic Motion behaviors so that the behavior's effect stops before the end of the object. This rule does not apply to the Simulation behaviors, however. Changing the duration of a Timeline bar for a Simulation behavior does stop the "active" force on the object, but does not stop the motion. Remember, Simulation behaviors simulate natural effects, so the laws of inertia apply—an external force set the object in motion, so that object stays in motion even when the active force is no longer present. For more information on Parameter behaviors, see Chapter 5, "Using Behaviors," in *Motion Help*.

Using Keyframes in Motion

While you can use behaviors to easily create animations, keyframing gives you the ability to set precise parameter values at specific frames. For example, use keyframing to create an animation in which a text object spins for three 360-degree rotations over frames 1 to 120.

Keyframe Basics

You animate an object by creating at least two keyframes for a parameter, such as Opacity, at different points in time in a project. A keyframe is a point in time that records any change in the value of a parameter. For example, to create an animation in which an object is completely transparent at frame 1 and becomes completely opaque at frame 120, you create two keyframes: an Opacity keyframe set to a value of 0 percent at frame 1, and an Opacity keyframe set to a value of 100 percent at frame 120. The image fades in from 0 percent to 100 percent over the 120 frames. The smooth, fade-in transition between the two keyframed values is called *interpolation*.

All keyframes for a specific parameter (such as Opacity or Rotation) are positioned on a line over time. Different values for the keyframes change the shape of that line and create what is called an *animation curve*. The type of curve from keyframe to keyframe (interpolation) can be changed to create different animation effects. For example, keyframes set to Bezier create smooth transitions in values. Keyframes set to Linear create straight lines between the keyframes, for sharper changes in value. You can modify keyframes and their animation curves in the Keyframe Editor, located in the Timing pane. For more information, see Chapter 6, "Keyframes and Curves," in *Motion Help*.

Although working with keyframes is never a party, it is a necessary process when your project calls for strictly-timed effects. Keyframing tools in Motion provide several convenient ways to create keyframes, as well as a clean palette in the Keyframe Editor in which to edit those keyframes. There are three ways to create keyframes in Motion:

Record button: When the Record button is enabled (in the transport controls), any change in value to a parameter—whether in the Canvas, a Dashboard, or the Inspector—results in the creation of a keyframe.

Animation menu: Located in the Inspector, this menu allows you to set explicit keyframes at any time, for any parameter. *For each keyframe, you add a keyframe first, then adjust the parameter.* The Record button does not need to be enabled to add keyframes with the Animation menu. For more information, see "Keyframing in the Inspector" on page 114.

Creating keyframes from applied behaviors: You can create keyframes by "baking" a behavior or behaviors that have been applied to an object. Since a behavior merely applies a value range to an object's parameter, this gives you additional control over the effect and timing of a behavior. For more information, see "Converting Behaviors to Keyframes" on page 118.

Creating Keyframes in the Canvas

In this section, the position of a text object is keyframed so that the text moves across the screen over time. The easiest way to set up this type of basic animation (aside from using a behavior) is with the onscreen controls in the Canvas. In this example, Animation Path is enabled in the View menu so that you can clearly see the animation as it is created. Once keyframes are created, you can edit the animation path in the Canvas, as well as modify the keyframes in the Keyframe Editor.

To move an object across the screen:

1. In the transport controls, enable Record (or press **A**).
2. Go to the frame where you want to begin the animation.

   Note: To quickly navigate to a specific frame, type the frame number in the Current Frame field (to the left of the transport controls).

3 In the Canvas, click the View menu and make sure that Animation Path is enabled.

4 In the Canvas, position the object.

The first keyframe is created and appears in the center of the object.

5 Go to the frame where you want the animation to end.

6 Move the object to its end position.

As you drag, the animation path is drawn and the second keyframe is created.

Note: Do not drag the actual keyframe (the red point) to move the object. Rather than creating a new keyframe, you merely reposition the existing keyframe.

7 Disable Record (press **A**).

Using Animation Paths

An animation path displays the motion of an object over time in the Canvas. Once you have created an animation that transforms an object (with two or more keyframes), you can change the shape of the path to modify the object's animation. This section continues using the "stingray" example from above.

On the animation path, the small red squares indicate frames, and the larger red points are keyframes. On an animation path, the keyframes are used as editable control points. You can edit the animation path in the Canvas by adjusting the existing control points, or by adding or removing control points.

To add control points (keyframes) to an animation path:

1 In the Canvas, **Option**-click the path.

A new control point is added.

Note: You can also double-click an animation path to add a control point.

2 Drag the control point to the new position.

By default, the keyframes created when an object is animated in the Canvas are Bezier keyframes. By adjusting the keyframe (control point) handles, you can change the shape of the animation path, or change a Bezier keyframe into a Linear keyframe. Bezier points create a smoother motion for a transformed object, and Linear points create a sharper transition.

To reset the control points on an animation path:

- **Command**-click the point. This creates a Linear point—continue dragging to create new tangent handles.

To break tangent handles:

- Press **Command** and drag the end of a handle.

To reset tangent handles:

- Press **Command** and drag the end of a handle.

To delete a control point:

- Select the point and press **Delete**, or **Control**-click the point, then choose Delete from the shortcut menu.

Keyframe Interpolation Basics

As mentioned in "Keyframe Basics" on page 103, interpolation is what Motion uses to set the parameter values for the frames in between keyframes. Since keyframes are set to specific values, the in-between frames must be "filled in" with values to create a smooth transition between the two keyframes. Motion uses the following interpolation methods:

Constant: Creates a constant value (a straight line) between keyframes with no interpolation. This results in sudden changes at keyframes.

Linear: Creates a straight line (a uniform value) between keyframes with interpolation that creates sharp angles at large changes in value.

Bezier: The default interpolation method; creates smooth curves that allow you to change the slope of the curve at the keyframe. This is the most common interpolation method, and allows you to create animations in which an object eases in or out of a specific value.

Continuous: Continuous creates smooth curves without editable keyframes. For example, if you have three keyframes, the implied tangent at keyframe 2 is parallel to a line between keyframes 1 and 3.

Ease In: Creates a flatter curve at the frames coming in to the keyframe, resulting in the object slowing down as it approaches the keyframe. This is the equivalent of manually lengthening a point's tangent handle.

Ease Out: Creates a flatter curve at the frames going out of the keyframe, resulting in the object slowing down as it moves away from the keyframe.

For more information, see Chapter 6, "Keyframes and Curves," in *Motion Help*.

Using the Keyframe Editor

While the Timeline shows an overall view of the objects and effects in your project and their relation to each other in time, the Keyframe Editor provides an editable, graphic representation of how your effect changes over time. Animated parameters appear as curves in a graph in the Keyframe Editor—the values of each keyframe define the shape of the animation curve. In the editor, you can add or remove keyframes, move keyframes in time, change the interpolation of the curve or individual keyframes, and save custom curve sets.

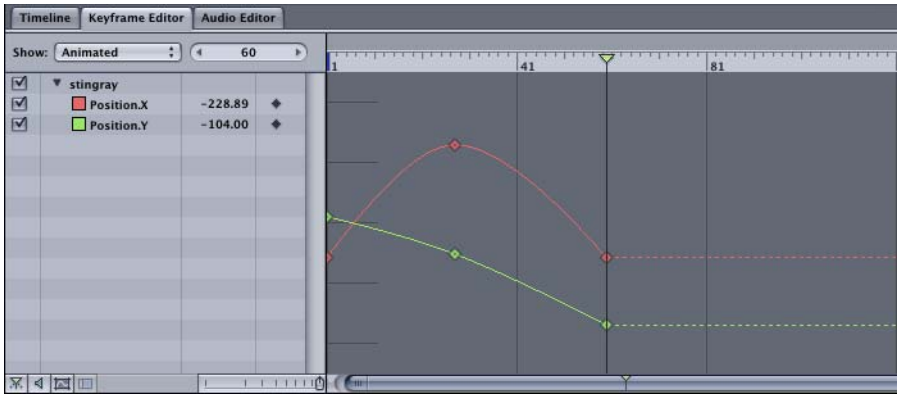
Like the Timeline, you can keep a tidy house in the Keyframe Editor by controlling the list of displayed parameters. You can choose to show all parameters for a selected object, only animated parameters, or all active parameters. Active parameters follow whatever you are currently editing, whether in the Canvas, Dashboard, Inspector, and so on.

The Keyframe Editor, located in the Timing pane, is not displayed by default.

To show the Keyframe Editor:

- In the Timing pane, click the Keyframe Editor tab.

By default, the animated parameters are listed in the parameter list and their curves are displayed in the Keyframe Editor. In the parameter list, only the Position parameters appear. This is because only the position of the object is animated in this example.



You can filter what is displayed in the Keyframe Editor using the Show pop-up menu. Click the Show pop-up menu, then choose All, Animated, or Active. When All is chosen, all parameters associated with the selected object are displayed, whether or not they are animated. If a parameter is animated, a gray diamond appears next to the parameter in the list. If the keyframe appears solid, the keyframe exists at the current frame. If the keyframe appears outlined, that parameter is animated, but no keyframe is present at the current frame.

You can also create and save custom curve sets. For more information, see Chapter 6, "Keyframes and Curves" in *Motion Help*.

Note: You can also choose to show specific parameters in the Keyframe Editor by using the Animation menu in the Inspector.

Modifying Keyframes

The Keyframe Editor is an ideal environment for manipulating your keyframes because you can see their values, placement in time, and how the changes you make affect the animation curves. In the following example, the position of an object is animated over three keyframes.

There are several ways to modify keyframes in Motion:

- In the Keyframe Editor, use the shortcut menus (**Control**-click a keyframe).
- Use the Animation menu (located in the parameter list in the Keyframe Editor).
- In the Keyframe Editor, drag the keyframe to change its value.
- In the Timeline or Keyframe Editor, move the keyframe in time.

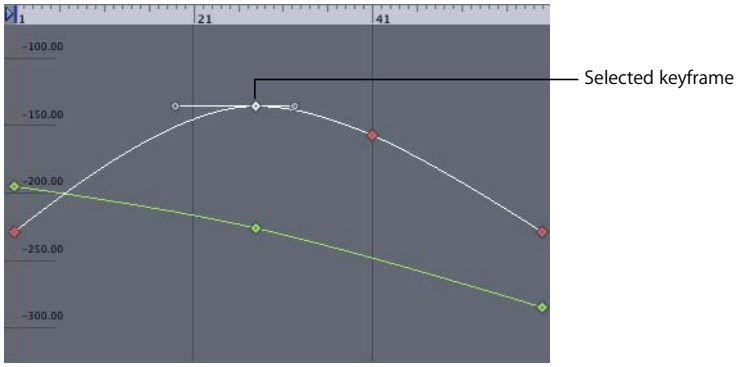
To display the curves for animated parameters:

1. Select the animated object or layer.
2. In the Keyframe Editor, click the Show pop-up menu, then choose Animated.

To change the value of a keyframe:

1. Select the keyframe on the curve you want to modify.

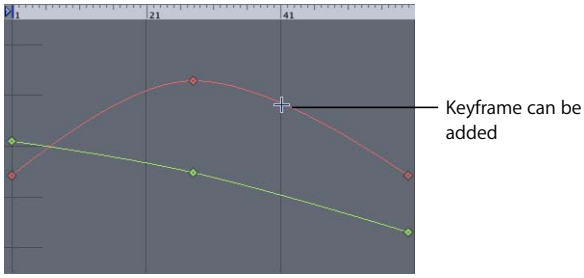
   The keyframe and the curve are selected.



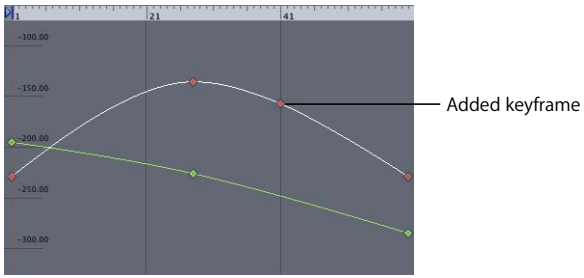
2. Do one of the following:
   - To change the value of the keyframe, drag along the Y axis (up and down).
   - To change the position of the keyframe in time, drag along the X axis (left to right).

To add a keyframe:

1. Position the pointer over the animation curve you want to modify, then press **Option**.
2. When the pointer turns into a +, click the curve.



A keyframe is added to the curve.



3. Drag the keyframe to set a new value.

To delete a keyframe, do one of the following:

- Select the keyframe on the curve, then press **Delete**.
- **Control**-click the keyframe on the curve, then choose Delete from the shortcut menu.
- With the parameter selected in the parameter list, click the Animation menu and use the Previous or Next Keyframe option to navigate to a specific keyframe, then choose Delete from the Animation menu.

Checking Your Selection

Like the in-context Inspector and Dashboards, the parameters displayed in the Keyframe Editor depend on what objects are selected (when Active or Animated are selected from the Show menu). If you select one object in the Layers tab, Canvas, or Timeline, only parameters for that object are accessible in the Keyframe Editor.

To compare curves from multiple objects (for example, to make two separate objects begin fading in at the same time), you must select both items in the Layers tab or in another window.

Additionally, you can modify the curves for an entire layer if the layer itself is selected (rather than the objects within it). Because the layer is the "parent" for all of its objects, you can view or modify keyframes that affect all of the objects within the layer as a group.

Like the control points on the Canvas animation path, you can modify the tangents of the keyframes in the Keyframe Editor to adjust the shape of the animation curve. For more information on working with the Keyframe Editor, see Chapter 6, "Keyframes and Curves," in *Motion Help*.

Recording Keyframes During Playback

Motion can record any changes to an object's parameters during active playback. Although this example only shows keyframing the position of an object, you can record changes in blend mode, opacity, and so on.

To record keyframes during playback:

1. Enable Record (press **A**).
2. In the transport controls, click the Play button.
3. Move the object in the Canvas.

   Keyframes are created for the "motion sketch" path in which the object is moved in the Canvas.

To display the recorded keyframes:

- Click the Keyframe Editor tab.

  Animated is selected by default from the Show menu, and the keyframes are displayed in the editor.

Setting Recording Options

By default, a keyframe is added to every frame while recording. You can choose to record fewer keyframes to simplify your animation curves.

To record fewer keyframes:

1 Choose Mark > Recording Options.

The Recording Options dialog appears.

2 Select from the following recording options:

- **Off:** Creates a keyframe at every frame (in which movement is applied).
- **Reduced:** Simplifies the curve.
- **Peaks Only:** Creates keyframes at only the frames with the greatest shifts in value, for example, when a change in direction occurs.

Note: To disable the recording of keyframes during playback, turn on the "Don't record keyframes during playback" checkbox in the Recording Options dialog. When this is enabled, you can still create keyframes normally.

Keyframing Objects With Applied Behaviors

In addition to animating objects with keyframes, you can apply behaviors to the keyframed objects as well. When behaviors and keyframes are applied to an object simultaneously, the values generated by the behavior and the keyframed values that are applied to a parameter are added together to yield the final value for that parameter. This allows you to combine the automatic convenience of behaviors with the direct control of keyframing to achieve your final result.

In a simple example, you can apply a Spin behavior to create an animation in which an object rotates. If you then want the object to move from a specific position to another specific position over time, you can keyframe that object's position.

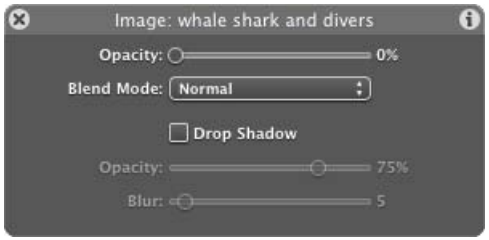
For more information on combining behaviors and keyframes, see Chapter 5, "Using Behaviors," in *Motion Help*.

Keyframing in the Dashboard

As mentioned above, when Record is enabled, keyframes are created any time a parameter value changes. Since Dashboards contain an editable subset of the Inspector parameters, you can create keyframes using an object's Dashboard. The following example uses the Dashboard to animate a simple fade-in effect on an object.

To animate the opacity of an object using the Dashboard:

1. In the transport controls, enable Record (press **A**).
2. Select the object that you want to animate.
3. Go to the frame in which you want to begin the fade in.
4. In the object Dashboard, drag the Opacity slider to 0.



An Opacity keyframe is created.

5. Go to the frame in which you want to end the fade in.
6. Drag the Opacity slider to 100.

   A second Opacity keyframe is created.
7. Disable the Record button (press **A**).

Keyframing in the Inspector

Keyframes can be created in the Inspector in two ways:

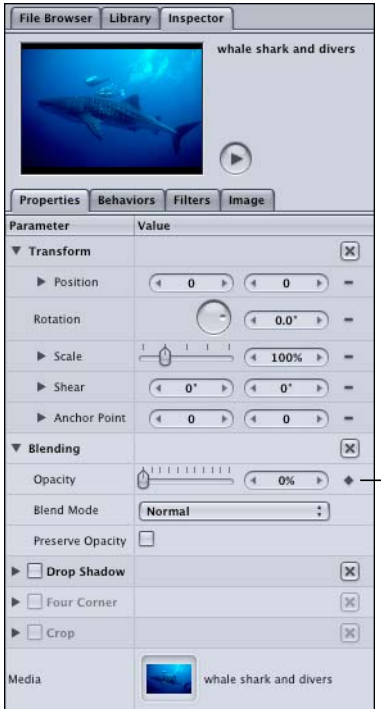
- When the Record button is enabled, any change made to a parameter's value creates a keyframe.
- When the Record button is disabled, you can explicitly add keyframes in the Animation menu.

The following examples use both methods to create the same fade-in animation as discussed in the preceding section, "Keyframing in the Dashboard."

To animate opacity in the Inspector using Record:

1. In the transport controls, enable Record (press **A**).
2. Select the object that you want to animate.
3. Go to the frame where you want to begin the fade in.
4. In the Blending section of the object's Inspector > Properties tab, drag the Opacity slider to 0 (or enter 0 in the value field).

A gray diamond that represents the keyframe appears to the right of the parameter name. Whenever you are parked on a frame that contains a keyframe, the diamond appears filled in.



5 Go to the frame in which you want to end the fade in.

6 Drag the Opacity slider to 100 (or enter 100 in the value field).

If you move to a frame that does not contain an Opacity keyframe, the diamond appears outlined rather than solid. This indicates that the parameter is animated, but you are not currently on a frame that contains a keyframe.

7 Disable the Record button (press **A**).

To animate opacity in the Inspector using the Animation menu:

1 In the transport controls, ensure that Record is disabled.

2 Select the object that you want to animate.

3 Go to the frame where you want to begin the fade in.

4 In the Blending section of the object's Inspector > Properties tab, drag the Opacity slider to 0 (or enter 0 in the value field).

5 Click the Animation menu icon, then choose Add Keyframe.

An Opacity keyframe is created.

6 Go to the frame where you want to end the fade in.

7 Click the Animation menu icon, then choose Add Keyframe.

Important: As mentioned earlier, a second keyframe must be added before you adjust the parameter of the object. If you adjust the parameter before adding a second keyframe, you shift the entire curve (because Record is disabled).

8 Drag the Opacity slider to 100 (or enter 100 in the value field).

A second Opacity keyframe is created.

Keyframing Filters

In Motion, nearly all parameters can be animated. Filters, like object properties, also contain parameters with values that can be keyframed over time. In addition to keyframing a filter, you can apply a Parameter behavior to a filter to create unique effects.

You can also apply Parameter behaviors to specific parameters of a filter. For more information, see "Animating Filters With Parameter Behaviors" on page 92.

In the following example, the Kaleidoscope filter is applied to a single image. The filter is animated over time to create a moving pattern generated from the single image.

Original image

To keyframe a filter:

1. Apply the Kaleidoscope filter (located in Library > Filters > Tiling) to an object.
2. Go to frame 1 and enable Record (press **A**).
3. In the Kaleidoscope Dashboard (press **D**), set a value for the Segment Angle and Offset Angle.

   Note: You can also use the filter's onscreen controls in the Canvas to adjust the Kaleidoscope parameters.
4. Go to the last frame and set new values for Segment Angle and Offset Angle.
5. Play the project.

The animated filter makes it seem like you are looking at the image through a rotating kaleidoscope.

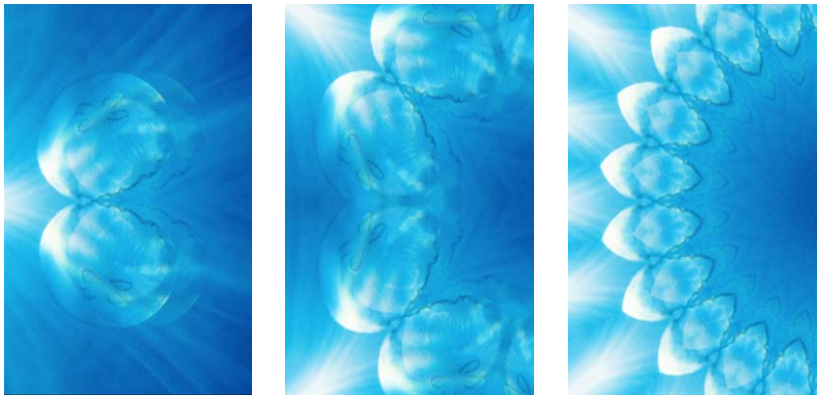


Image with keyframed Kaleidoscope filter applied

Note: You can also animate filters using the same methods discussed in "Keyframing in the Dashboard" on page 113 and "Keyframing in the Inspector" on page 114.

Converting Behaviors to Keyframes

Behaviors are best suited for fluid effects in which precise timing is not a requirement. As mentioned earlier, behaviors create motion by applying a range of values to an object's parameters, without creating keyframes. You then generally adjust the rate of the behavior. When your project requires absolute timing, for example, when a title must fade in over 60 frames, rotate 360 degrees exactly 3 times, and land in a specific position on the screen, you would generally keyframe your animation.

For finite control over animated effects created with behaviors, several of the behaviors can be *baked* into keyframes. You can then modify the keyframes in the Keyframe Editor to meet more precise timing requirements.

Since many (though not all) behaviors affect shared object parameters, when you convert a behavior to keyframes, all behaviors applied to that object are also converted into keyframes. For example, the Gravity and Throw behaviors affect Position, so you could not convert the Gravity behavior to keyframes without affecting the Throw behavior.

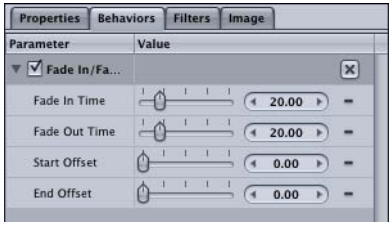
Note: You cannot convert many of the Simulation behaviors into keyframes. Simulation behaviors such as Vortex can affect the parameters of all objects within a project, and baking such a behavior would create an overwhelming amount of keyframes (and motion graphics artists everywhere would run screaming from their computers). Remember, the beauty of such behaviors is that they automatically create very complex motion that would be too time-consuming to keyframe manually.

If a behavior can be baked, the Convert to Keyframes command appears in the Object menu when the behavior is selected. If the Convert to Keyframes command is dimmed, the keyframes cannot be generated from the behavior.

In the following example, keyframes are created from the Fade In/Fade Out and Spin behaviors that are applied to an object.

To convert an applied behavior to keyframes:

1. Select the object with the applied behaviors.
2. In the Behaviors tab of the Inspector, select the behavior from which you want to create keyframes (in this example, the Fade In/Fade Out behavior is selected).



3. Choose Object > Convert to Keyframes.

   A dialog appears and prompts, "Do you want to convert all behaviors of this object to keyframes? This operation could take a few minutes to complete."

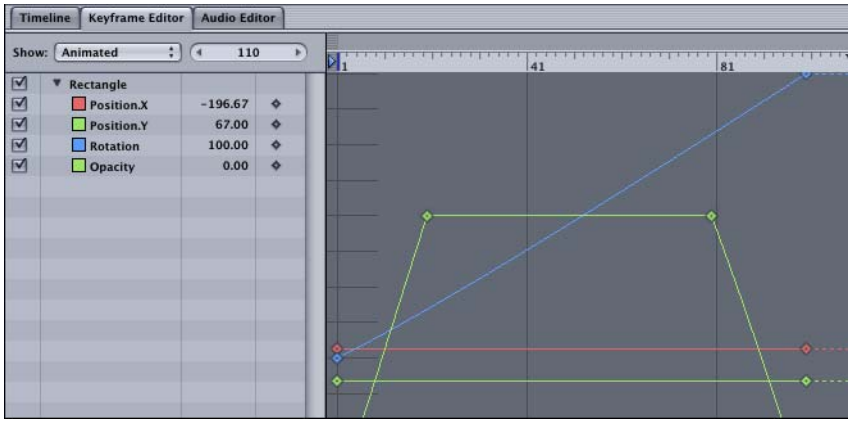
4. Click Convert.

   Since the behaviors are now converted to keyframes, the behaviors disappear from the Behaviors tab.

5. In the Timing pane, display the Keyframe Editor.

   In the Keyframe Editor, all animated object parameters appear (the keyframe icon appears next to the animated parameters) in the parameter list. By default, Animated is chosen from the Show pop-up menu.

The curves for the converted keyframes appear in the graph area of the Keyframe Editor.



6 Edit the animation curve as necessary.

For more information on working with the Keyframe Editor, see "Using the Keyframe Editor" on page 108.

Arts and Letters

4

Take the powerful Motion text tools for a spin, and then introduce yourself to the amazing possibilities of particles.

Creating and Animating Text

Text is the first love of many motion graphics artists. Edgy, bold, romping, or graceful, the right blend of fonts and animation can set the mood for your project. In Motion, text is created directly in the Canvas, or in the Text Editor of the Text tab in the Inspector. When text is created, it becomes a text object. Text objects have many of the same parameters as other objects, with a few exceptions. While text objects share Position, Opacity, Rotation, and other parameters, they also have unique attributes, such as format, style, and layout parameters.

Text objects can be animated like any other object using the Basic Motion or Simulation behaviors, or by setting keyframes. However, text objects also have their own Text Animation and Text Sequence behaviors.

Text behaviors work in the same manner as other behaviors, but create text animations by generating a range of values in the parameters specific to text titling effects, such as Tracking.

Text behaviors are ideal for interactively designing titles and other text animations—you don't have to set keyframes, wait for a preview, and play the preview. You can apply a Text Animation or Text Sequence behavior to a text object while your project plays back, as well as make interactive adjustments to the behavior parameters. Like other behaviors, text behaviors are applied at the beginning of the text object. This means that no matter where your playhead is during playback or when playback is paused, the behavior always begins at the start of the text object.

When text behaviors are combined with filters, you can quickly achieve exquisite results that look like they took hours to create.

The following sections provide a quick introduction to adding, editing, and animating text in a project. For more information, see Chapter 7, "Using Text," in *Motion Help*.

Adding Text

This section describes how to add text to your project. By default, when a new text object is created at frame 1, the object's duration is the length of the project. To shorten the duration of a text object, shorten the text object in the Timeline.

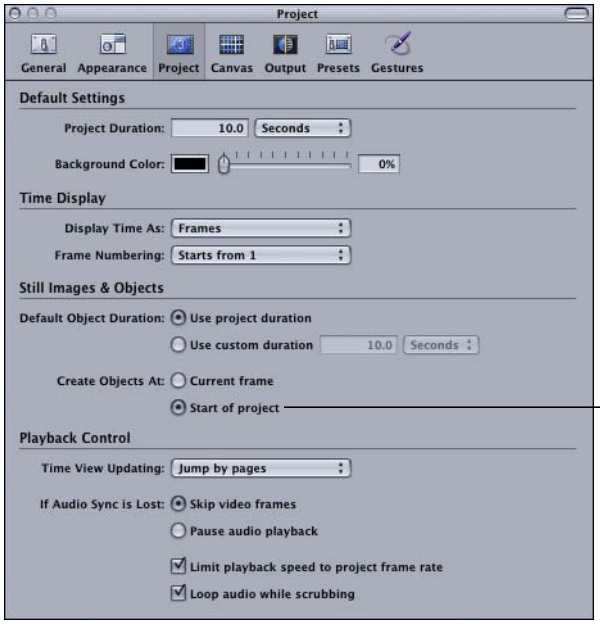
Setting Object Preferences

When you are working with text and shapes, you generally want to create objects at the start of the project. In Motion preferences, objects can be set to be created at the start of the project, or the current frame.

Set the Motion preferences to create objects at the start of the project:

1. Choose Motion > Preferences (**Command+,**).
2. Click Project.

3 In the Still Images & Objects group, set the Create Objects At parameter to Start of project.

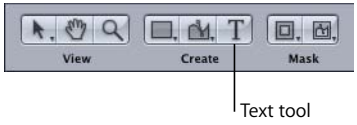


Select "Start of project" to create objects at the first frame of the project, regardless of the current frame.

To add text to your project in the Canvas:

1 In the Layers tab, select the layer to which you want to add text.

2 In the Toolbar, click the Text tool (or press **T**).



3 Click in the Canvas, then begin typing.

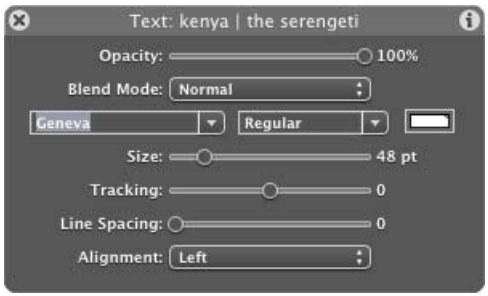
The text object appears in the Layers tab and in the Timeline.

4 Press **Esc**, or click the Select (or another) tool.

The name of the text object reflects the actual text entered.

Note: Once you have finished typing your text, be sure to press **Esc** or select another tool on the Toolbar—do not use a keyboard shortcut. For example, if the Text tool is selected and you press **S** to activate the Select tool, an "S" is added to your text object.

5 If there is no Dashboard present, press **D** to display the text object Dashboard.



The Text Dashboard contains the following commonly used text controls:

- Opacity
- Blend Mode
- Family
- Typeface
- Color
- Size
- Tracking
- Line Spacing
- Alignment

The complete set of text parameters, including the Dashboard parameters, is located in the Text Inspector.

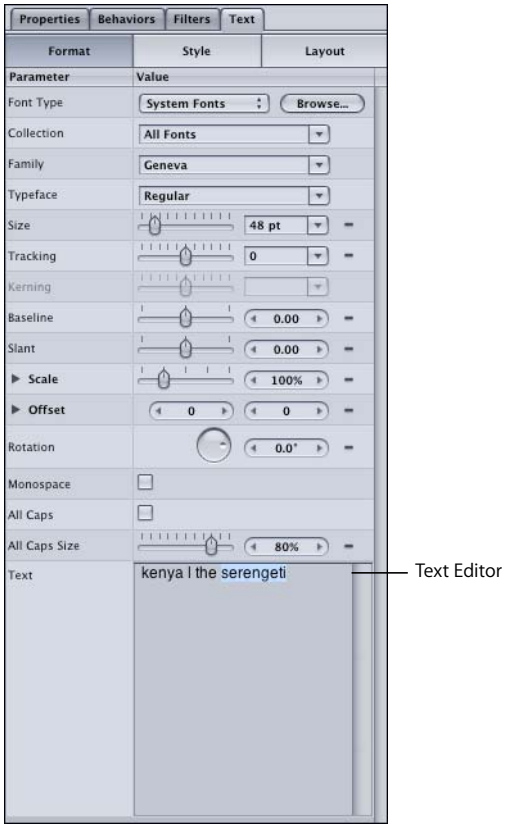
Modifying Text

There are several ways to select, add to, or edit a text object once it has been created. You can edit the text directly in the Canvas, the Dashboard, or in the Inspector.

To edit existing text in the Canvas, do one of the following:

- With the Select/Transform tool active, double-click a text object to automatically enter text editing mode (the Text tool is activated).
- Click the Text tool, then drag in the existing text object.
- To move between characters in text edit mode, press the **Left Arrow** or **Right Arrow** key.
- To select text, position the insertion point in between two characters, press **Shift**, then press the **Right Arrow** key to add characters to the right of the insertion point to the selection, or press the **Left Arrow** to add characters to the left of the insertion point to the selection.
- To add text to a custom margin, select the Text tool, then drag in the Canvas to draw a custom margin. Once the margin is drawn, release the mouse button and begin typing.

- Select the text object, and display the Inspector. In the Format pane of the Text tab, edit the text in the Text Editor (at the bottom of the Format pane).



To preview different font families for a text object in the Canvas:

1. Select the text object.
2. In the Dashboard or Text Format pane, click the Family pop-up menu arrow.

   The font family list appears.
3. Position the pointer in the font list, then drag up or down to move through the fonts.

   As you move through the font family list, the text changes in the Canvas to the currently selected font family.
4. Release the mouse button at the font selection you want to use.

   You can modify the individual characters, or a selection of characters, of a single text object. For example, you can select the second word of a two-word object, apply a different color, and change the font of the selection.

To modify characters within a text object:

1. Click the Text tool (press **T**).
2. In the text object, drag to select the characters you want to modify.
3. Use the Dashboard or Inspector to modify the selected characters.

Editing Text Style

While you can use the Dashboard to change the color of a text object, the text Style pane contains controls to change the fill of a text object and to adjust its opacity and softness. A text object fill can be a solid color, an image, or a color gradient. Most of the style parameters can be animated. You can also create outlines, glows, and apply drop shadows to a text object in the text Style pane. Once you have created a text style, you can save it to the Library.

For more information on applying outlines, glows, and shadows, changing text layout, and creating text on a path, see Chapter 7, "Using Text," in *Motion Help*.

To display the Text Style pane:

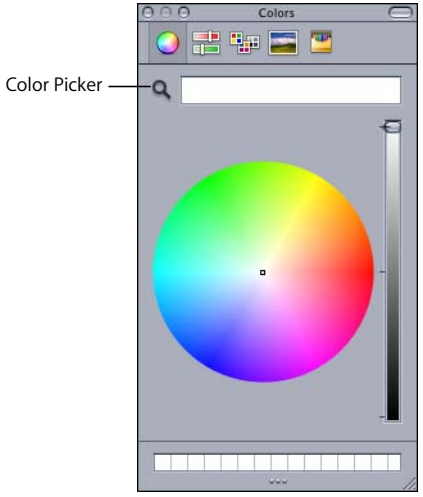
- In the Inspector, click the Text tab, then click Style.

Changing the Text Color

To change the color of a text object, use the color well in the Style pane.

To set the text object color in the Inspector:

1. Select the text object.
2. In the Style pane, locate the Face controls and ensure that Color is chosen in the "Fill with" pop-up menu.
3. Click the color well, then use the Colors window to set the text color.



Note: To select a color from the Canvas (or anything on your computer's desktop), click the Color Picker tool in the Colors window, position the tool over the color, then click.

Applying a Gradient to a Text Object

In the Style pane of the Text tab, you can create and animate gradient fills for text objects.

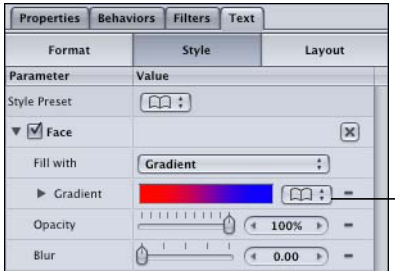
To create a text object gradient:

1. Select the text object.
2. In the Style pane, choose Gradient from the "Fill with" pop-up menu.

   The color controls are replaced with the gradient controls, and the default gradient is applied to the selected text object.

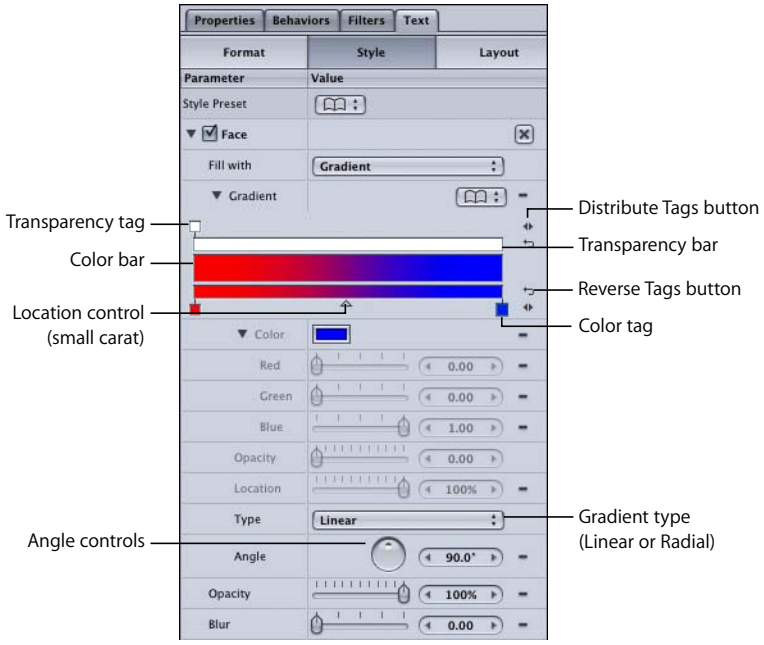
To apply a gradient preset to a text object:

1. Select the text object.
2. In the Style pane, locate the Face controls and choose Gradient from the "Fill with" pop-up menu.
3. Choose a gradient from the Gradient Library pop-up menu.



To change gradient colors:

1 Click the Gradient disclosure triangle to display the Gradient Editor.



2 To change the color of a gradient tag, do one of the following:

- Double-click a gradient color tag.

  The Colors window appears. Use the Colors window to set a new color for the tag.

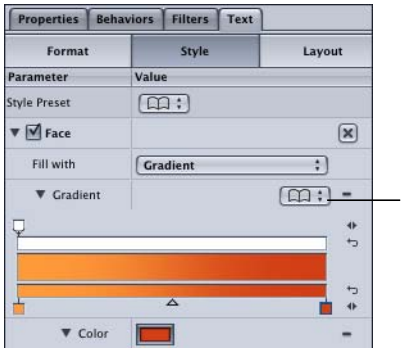
- Click a gradient color tag.

  The color controls for that tag are enabled. In the color controls, you can either click the color well to show the Colors window, or use the individual color channel controls to set a new color for the tag.

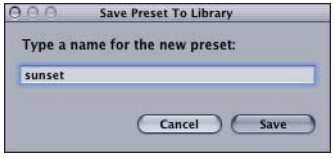
For information on adjusting the opacity and location of the gradient colors, as well as creating animated text gradients, see Chapter 7, "Using Text," in *Motion Help*.

To save a custom gradient to the Library:

1 Click the Gradient Library pop-up menu, then choose Save Gradient.



2 In the Save Preset To Library dialog, type the preset name, then click Save.



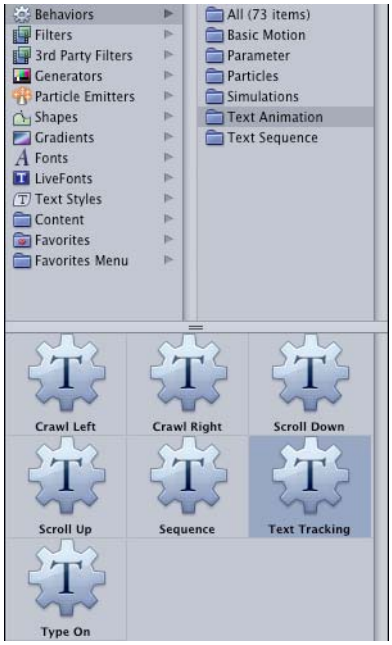
The preset is added to the Gradients category in the Library. The next time you apply a preset gradient from the Gradient Library, the new gradient appears in the preset list.

Applying Text Behaviors

Behaviors and filters are applied to text objects in the same manner as other objects in Motion. This section provides a quick start to applying behaviors and filters to text objects.

To apply a behavior to a text object, do one of the following:

- In the Library, select the Behaviors category. Click the Text Animation or Text Sequence subcategory, then select a behavior from the stack. Drag the behavior to a text object in the Canvas, Layers tab, or Timeline.



- Select the text object, click the Add Behavior icon in the Toolbar, then choose a behavior from the Text Animation or Text Sequence submenu.

The behavior is applied to the text object, and the text Dashboard is replaced with the selected behavior Dashboard.

To apply a filter to a text object, do one of the following:

- In the Library, select the Filters category. Select a filter subcategory, then select a filter from the stack. Drag the filter to a text object in the Canvas, Layers tab, or Timeline.
- Select the text object, click the Add Filter icon in the Toolbar, then choose a filter from the pop-up menu.

The filter is applied to the text object and the filter Dashboard appears.

Note: For information on using filters, see "Working With Filters" on page 91. For information on animating filters, see "Keyframing Filters" on page 116.

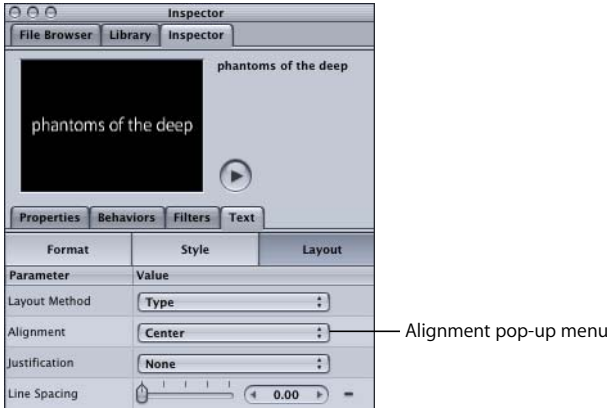
Applying Behaviors to Text Objects

Since text objects are like other objects in Motion, you can apply any behavior type to a text object, such as Basic Motion behaviors. You can also apply a combination of text behaviors with the other behavior types.

In the following examples, a text object is added to a project. Next, the Text Tracking behavior (from the Text Animation subcategory) and the Fade In/Fade Out behavior (from the Basic Motion subcategory) are applied to the text object while the project plays back.

To add a text object:

1. In the Toolbar, select the Text tool (or press **T**).
2. Click in the Canvas, then type some text.
3. In the Text Layout pane or Dashboard, set Alignment to Center.



The text shifts position in the Canvas because its anchor point is moved from the left (default) of the text object to its center. If necessary, reposition the text object in the Canvas.

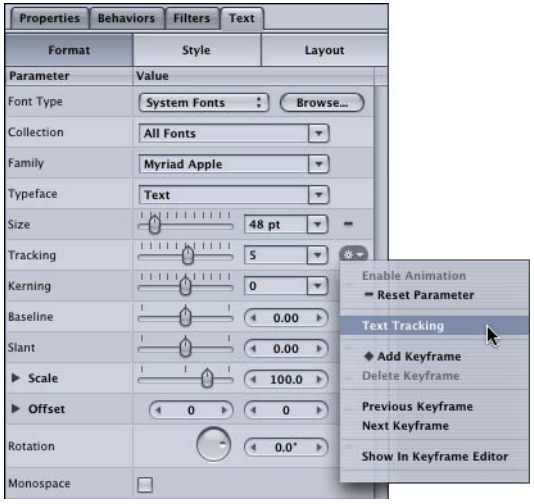
Note: New text objects (as well as shapes and masks) are created at the frame where the playhead is when you click in the Canvas with the Text tool, or at the start of the project. For more information on setting object preferences, see page 123.

To apply the Text Tracking text behavior:

1. In the transport controls, click Play (or press the **Space bar**).
2. From the Library, drag the Text Tracking behavior from the Text Animation subcategory to the text object.

   The text tracking is animated and the Tracking Dashboard (press **D**) appears.

You can adjust the Tracking rate in the Dashboard or Inspector. As the project plays, the animated Tracking values are visible in the Format pane of the Inspector. The behavior icon in the Tracking parameter's Animation menu indicates that a behavior is applied to the parameter. To quickly jump to the Behaviors tab in the Inspector, click the Animation menu, then choose Text Tracking.



The duration of a Text Animation behavior is the length of the object to which it is applied. You can stop the effect of a Text Animation at a certain frame by trimming its bar in the Timeline. For more information, see "Modifying Behaviors in the Timeline" on page 102.

Note: The duration of the Text Sequence behaviors are 60 frames by default.

Text Behaviors vs. Keyframes

The Text Tracking behavior generates a range of values in the Tracking parameter without creating any keyframes. To create an animation in which the tracking must hit distinct values at specific frames, use keyframing rather than a behavior.

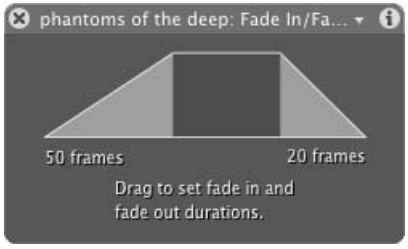
To keyframe the Tracking parameter of a text object:

1. Select the text object.
2. Go to the frame where you want to start the tracking animation.
3. Enable Record (press **A**).
4. In the Format pane of the Text Inspector, set the initial Tracking value.
5. Go to the frame where you want to end the tracking animation.
6. Set the final Tracking value.
7. Disable Record (press **A**).
8. Play the project (press the **Space bar**).

To apply the Fade In/Fade Out Basic Motion behavior:

1. From the Library, drag the Fade In/Fade Out behavior from the Basic Motion subcategory to the text object.

   By default, the text object is transparent at frame 1, and fades in over 20 frames. The Text Tracking Dashboard is replaced by the Fade In/Fade Out Dashboard.
2. In the Fade In/Fade Out Dashboard, drag the fade in shaded area (the left side of the controls) until the Fade In is set to 50 frames.

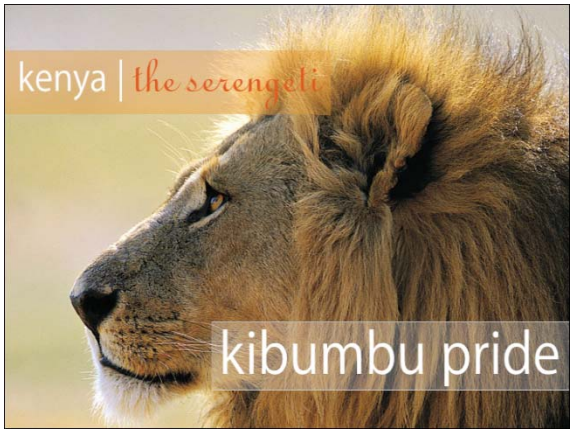


The text object is transparent at frame 1 and becomes opaque by frame 50.

Using the Sequence Behavior

The most powerful Text Animation behavior is the Sequence behavior. The Sequence behavior allows you to hand pick parameters, such as Color, Scale, or Opacity, and animate those parameters in sequence across a text object.

The following example shows how to use the Sequence behavior to animate the Opacity and Scale parameters of a text object in sequence.



Original image and text objects

To add the Sequence behavior:

1. Select the text object.
2. From the Library, drag the Sequence behavior from the Text Animation subcategory to the text object.

   The Sequence Dashboard appears and the behavior is added to the text object in the Layers list.

In the Canvas, the Sequence bounding box appears.

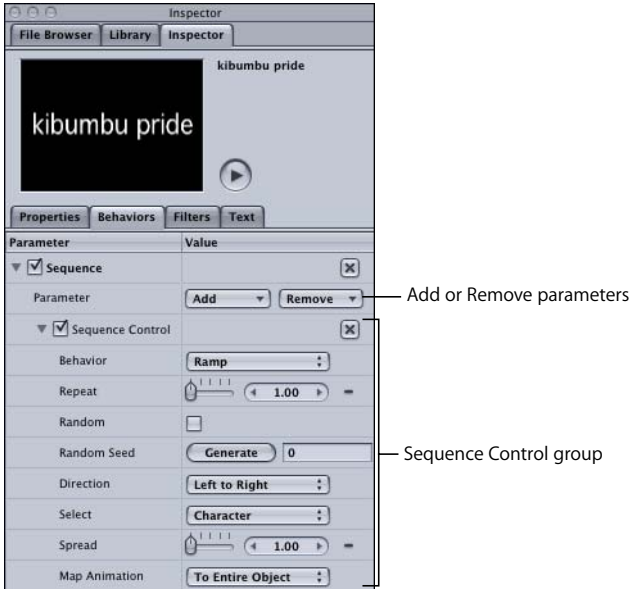
Before any animation occurs, you must explicitly add a parameter to the behavior from within the Inspector. Until a parameter is added, Dashboard adjustments have no effect.

To use the Sequence behavior:

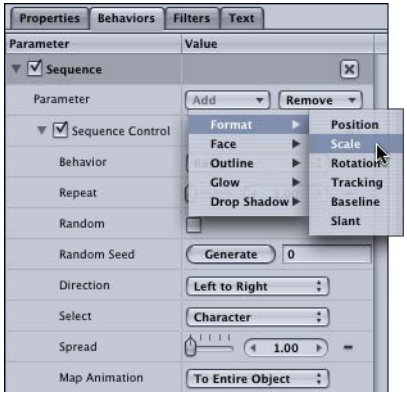
1 With the Sequence behavior selected, display the Behaviors tab in the Inspector.

The upper area of the Sequence controls contains the Add and Remove pop-up menus, which are used to select parameters to add to the behavior or to remove parameters.

The second group of parameters is the Sequence Control group, which includes options for setting the direction of the animation, whether the animation is applied per character, per word, or per text object, and so on.



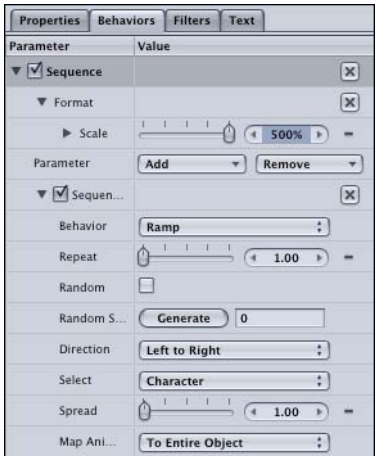
2 In the Parameter row, click the Add button, choose Format, then Scale from the submenu.



The Scale parameter is set to 100 percent by default, which represents the original size of the text object.

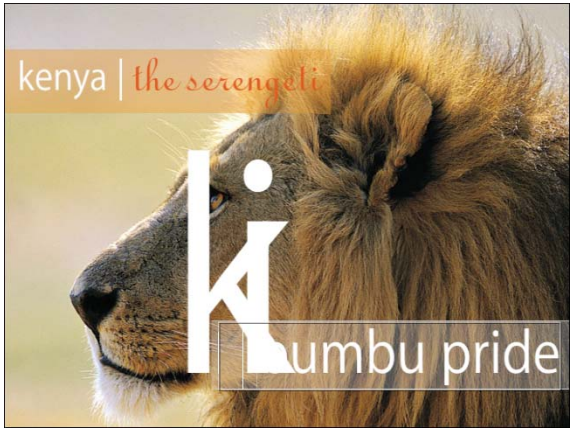
3 Set Scale to the largest (or smallest) value you want the text to become in your animation. In this example, the Scale value is set to 500.

Note: Often, you can enter values larger than a parameter's slider allows by typing in the value slider.



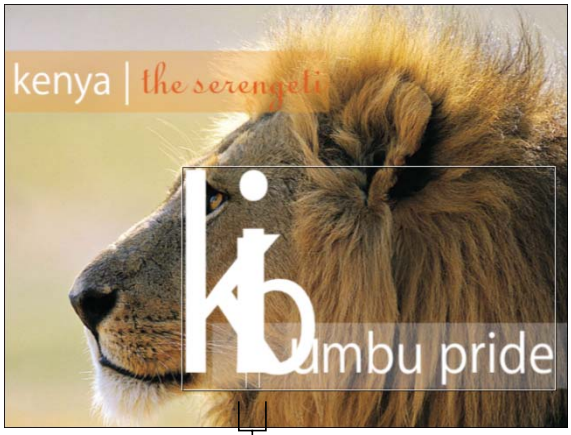
4 Click the Play button (or press the **Space bar**).

The first character begins at 100 percent, scales up to 500 percent, and then scales back down to 100 percent. The animation sequence moves through the text object.



The animation cycles through each character because the Select parameter is set to Character by default. For example, when Select is set to Word, each word in the text object scales up and down as a single character.

As the animation sequences through the text object, small white lines travel with the animation. These lines represent selection—whatever is in between the two solid white lines is the current selection, and receives the full effect of the animation. The soft line represents the selection falloff, and "leads" the next character into the animation.



You can customize and animate the location of the selection. For more information, see Chapter 7, "Using Text," in *Motion Help*.

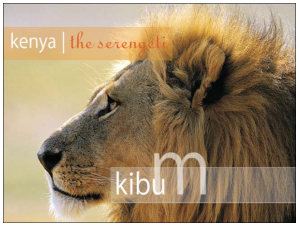
5 Choose All from the Select pop-up menu.

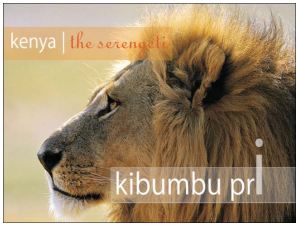
All of the text characters begin at 500 percent and scale down to 100 percent simultaneously.

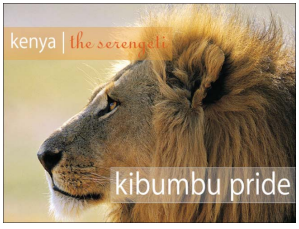
Note: Make sure that the Map Animation parameter is set to To Entire Object.

6 In the Parameter row, click the Add button, choose Face, then choose Opacity from the submenu.

7 Set the Opacity to the lowest value you want to use in your animation. In this example Opacity is set to 0 percent so that the text characters gracefully fade in and scale in to 100 percent.





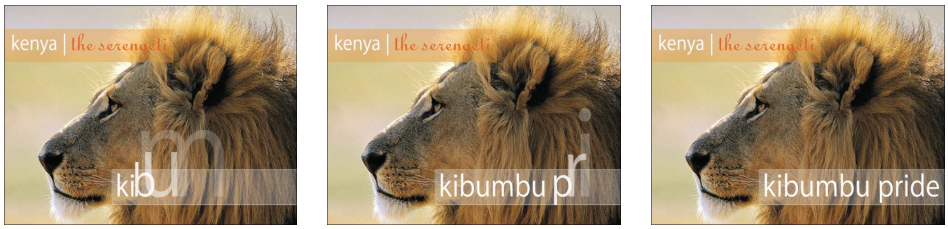


Notice that each character fades in and settles before the next character's animation begins. To create a softer transition between each character, you can adjust the Spread parameter.

To adjust the Spread parameter:

- In the Sequence Behaviors tab, drag the Spread slider (or type a value in the value slider field).

This example uses a Spread value of 3.



For more information on the Text Sequence behavior, see Chapter 7, "Using Text," in *Motion Help*.

Note: All of the Text Sequence behaviors (in the Text Sequence subcategory) are presets based on this Sequence behavior. You can modify the preset parameter values and add or remove parameters.

Creating Particles

Sparkly, smoky, savvy, or complete tomfoolery... Particle effects have become an essential tool in the motion graphics process. From creating animated backgrounds to real-world effects such as smoke and rain, the creation of particle effects in Motion is only as limited as your imagination.

You can use nearly any object in Motion as a particle shape. You can add multiple objects to a single particle emitter to create more elaborate effects. Or, you can drag a preset particle system into your project to use as designed, or customize it to better suit your project.

As with any object in Motion, you can keyframe the particle emitter and particle cell parameters. For example, you can keyframe the position of a particle emitter so that the emitter moves across the screen spreading sparkles like a magic wand.

Particle Systems

Motion particle systems use objects, referred to as *cells*, as the mold for the particles that are generated by the emitter. You can use nearly any object in Motion as a source for a particle cell. Each particle that is created is essentially a duplicate of the original cell, and is animated according to the parameters for that particle system (a particle cell or cells and emitter).

Simple shape (star) object

Shape as particle cell source

The particle emitter and particle cells have separate tabs in the Inspector, each with its own set of parameters that work together to control how the particle system acts. If you imagine that a garden hose is a particle system, the nozzle acts as the emitter, while the water represents the flow of particles. Changing the parameters of the emitter changes the direction and number of particles that are created, while changing the cell's parameters affects each individual particle.

You can apply Simulation behaviors to particle emitters or particle cells. A Simulation behavior applied to a particle cell affects each particle the cell generates. A Simulation behavior applied to a particle emitter can affect only the emitter, or all generated cells. Whoa. For example, you can apply the Gravity behavior to an emitter so that only the emitter falls, or so that all particles fall.

For even more variation, you can apply Parameter behaviors to particle cells. Combining the power of behaviors with the inherent particle system parameters allows you to easily create complex, limitless effects that are nearly impossible to accomplish any other way.

Adding Particles to Your Project

There are two ways to add particles to a project. The first method—and the easiest—is to apply a preset particle effect from the Library into your project. You can quickly customize a preset particle effect after it is added to your project, as well as replace the preset's particle cells with your own images or objects. The second way to add particles is to use an object in your project, such as a shape or image, to generate particles.

Adding a Preset Particle System

You can quickly apply a particle effect to your project using a pre-made particle system from the Library. The preset particle effects are located in the Particle Emitters category of the Motion Library. Once added to your project, you can modify all parameters associated with the particle system.

Note: You can save a preset particle system that you have modified back to the Library, and can preview the modified presets in the same manner as other particle effects. For more information on saving customized particle systems, see Chapter 8, "Working With Particles," in *Motion Help*.

To browse for a particle system in the Library:

1. In the Library, select the Particle Emitters category, then select a particles subcategory.

   The particle effects for that category appear in the stack.

2. In the stack, click a particle emitter.

   In the following image, the Gravity Phone emitter is selected (from the SciFi subcategory) in the stack and plays in the Preview area.

To add the selected particle system to your project, do one of the following:

- In the Preview area, click Apply.

The selected particle system is added to your project at the center of the Canvas. If no layer is selected when the particle emitter is added to a project, a new layer is created for the particle system in the Layers tab and Timeline. If a layer is selected when the emitter is added, the particle system is added to the selected layer.

- Drag the particle system to the Canvas at the position where you want it to appear.

The particle system appears in its own layer in the Layers tab and Timeline.

- Drag the particle system to the Layers tab or Timeline.

  The particle system appears at the center of the Canvas.

Common elements for a particle system include an emitter, one or more particle cells, and behaviors applied to the particle cells.

Once a particle system is added from the Library, it appears exactly as it appeared in the Library preview. You can modify a particle system's emitter and cell parameters in the Dashboard or Inspector to better suit your project. For more information, see "Modifying a Particle System" on page 145.

Creating a Custom Particle System

Although the Motion Library has many particle presets to choose from, you often just want to do your own thing and create something entirely new. To create a custom particle system, you add a particle emitter to your project and apply an object as a source for new particle cells. You can apply multiple objects to the same particle emitter as cell sources. Most objects can be used as a source for a particle cell, including images, image sequences, text, or shapes created in Motion.

If an object is selected when you add an emitter to your project, the selected object becomes the cell source and the particle cell. If multiple objects are selected when an emitter is added, all selected objects become emitter sources and particle cells for that single emitter. Once an object is added to an emitter as a source, the original reference object is disabled in the Layers tab.

In the following basic example, a single, 120 x 240 pixel image called "jelly" is used as a particle source over a background image to create a smack of jellyfish.

Note: "Smack" is the animal group name for jellyfish. Not as bad as an "implausibility" of gnus, but not as good as a "rhumba" of rattlesnakes, either.

To create a custom emitter:

1 In the Layers tab, select the object you want use as a particle cell source (or "nozzle").

Note: You can also add an emitter to a project when nothing is selected.

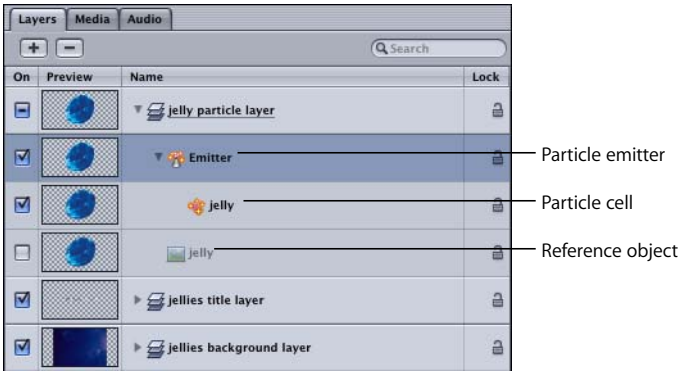
2 Select the object, then do one of the following:

- Click the Make Particles icon in the Toolbar.

- Press **E**.

Once an emitter is added to the project, the following occurs:

- The Emitter object appears in the Layers tab and is selected.
- The "jelly" object becomes an emitter source for the new particle cell.
- The original reference object is disabled.



- In the Canvas, the emitter bounding box appears, which can be transformed using the onscreen controls.
- The particle appears in the Canvas in the same location as the original object. Although it appears as if the particle is selected, it is actually the bounding box for the emitter.
- The Emitter Dashboard is displayed. If you have hidden the Dashboard, press **D**.

  Note: For projects with a frame rate greater than 30, at times only the bounding box (not the particle cell) may appear at the first frame of your project. Since particles are generated at 30 particles per second, there is no guarantee a particle will appear on every frame.

3. In the Canvas, move the object to the position from which you want the particles to emanate.
4. Click Play (or press the **Space bar**).

By default, 30 particles per second are emitted in all directions, and each one moves away at approximately 100 pixels per second.

Modifying a Particle System

Once you create a particle system, it performs according to its default parameters in the Emitter and Particle Cell tabs (located in the Inspector). You can use the Emitter or Particle Cell Dashboard to easily change the basic parameters of an emitter or cell. To view and modify all parameters for an emitter or particle cell, use the Inspector.

Using the Emitter Dashboard

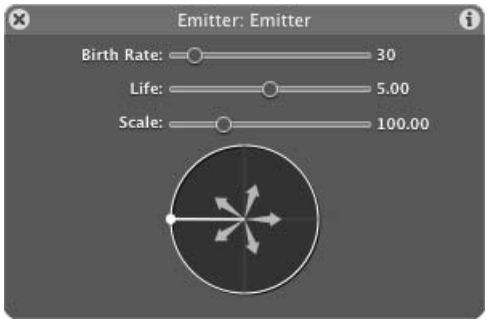
You can use the Emitter Dashboard to adjust several basic controls for the particle system, such as the size, life, and emission range and angle of the particles. These controls are a subset of the emitter controls located in the Emitter tab of the Inspector.

To show the Dashboard for a particle emitter:

- Select an emitter and press **D**.

The Dashboard contains the Birth Rate, Life, and Scale sliders, as well as the Emission control. The Emission control provides a visual way to modify three different particle system parameters: Emission Range, Emission Angle, and Speed.

The following image shows the default Emitter settings.



Note: For particle emitters with multiple cells, some Dashboard parameters are displayed as percentages, so that adjusting the emitter parameters simultaneously modifies the effect of each cell's parameters relative to one another. For example, adjusting the Scale parameter for an emitter with three different particle cells, each with a different Scale value (set in the Particle Cell tab of the Inspector), resizes all three cells relative to their original Scale values.

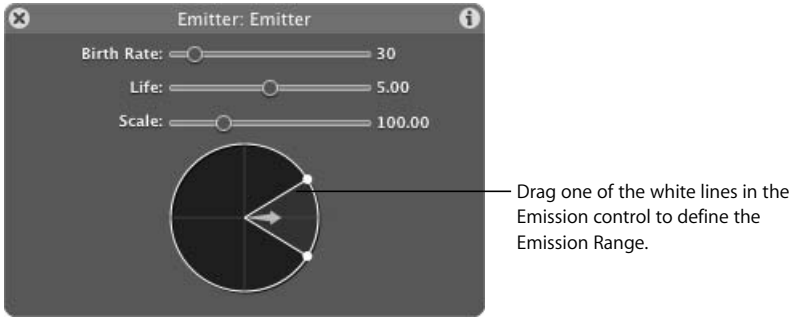
Continuing with the jellyfish example, the following section describes the Emitter Dashboard controls.

Birth Rate: This slider represents a percentage or value, based on the Particle Cell Birth Rate, of how many particles are created every second.

Life: This slider defines how long (in seconds) each particle remains onscreen before disappearing.

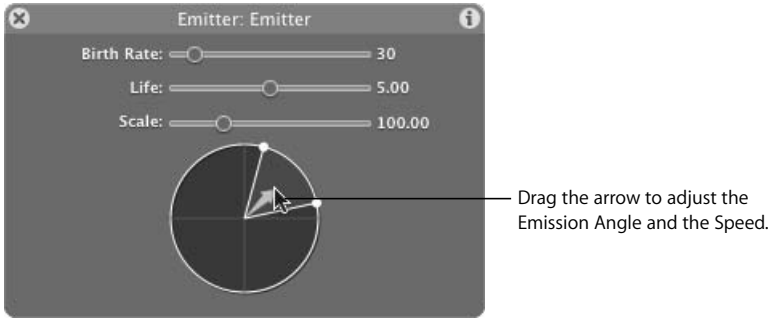
Scale: This slider defines the size of each particle, relative to the original size of the cell.

Emission Range: Controls that you can drag to define the Emission Range for the particles. Think of the Emission Range as controlling the size of the slice of the 360-degree "emitter pie."



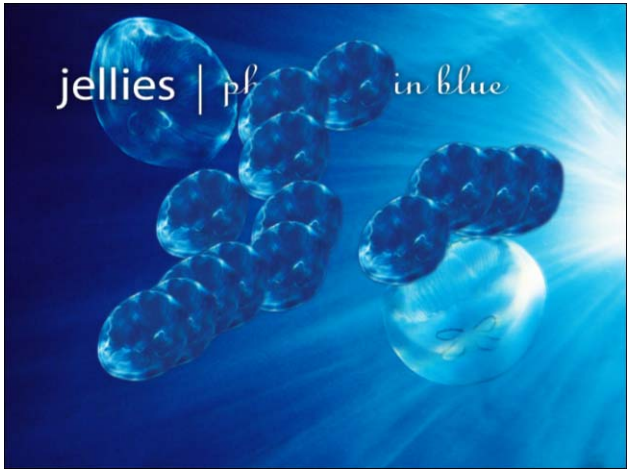
Emission Angle: Drag to define the direction of the Emission Range.

Speed: Arrows (within the defined Emission Range) let you drag to define the speed at which particles are emitted.



Once the Emission Range is narrowed and the Speed lowered, the particles emit from a smaller area more slowly.

Once the Birth Rate slider is lowered, fewer particles are emitted.



Using the Inspector

As with all objects in Motion, the Inspector contains all parameters for a particle emitter and particle cells. When an emitter only contains a single particle cell, the parameters for that cell appear in the Emitter tab, as well as the Particle Cell tab. When an emitter has multiple cells, only the names and image wells of the cells appear in the Emitter tab (and can be turned on or off). You can edit the parameters for each particle cell in their respective Particle Cell tabs.

The following jellyfish image is the result of the above steps and adjusting the Opacity Over Life, Spin, and Angle Range parameters in the Inspector. For more information on particles, see Chapter 8, "Working With Particles," in *Motion Help*.

Extra Credit

5

As the last step in your introduction to Motion, learn about keying and masking, audio, and how to export your final project.

Keying and Masking

Blue and green screen shots are often used as elements in a motion graphics project. In Motion, you apply keying filters to "pull" color keys. Keying filters remove a specified color from an image and leave other colors intact. Masks are often used to help remove areas of the image that the key alone did not remove, or to create specific shapes that remove portions of an image. Keys and masks work by creating transparency in areas of images so that images beneath the keyed or masked images in the composite are visible.

This section provides a quick overview on using the Primatte RT filter to pull a basic key in Motion, and applying masks to the matte pulled by the key. The next section discusses basic masking of images and using objects as masks.

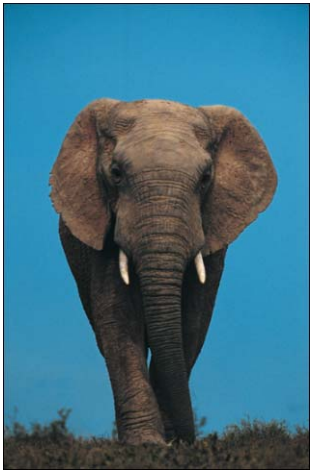
Creating a Key

Typically (and hopefully), footage to be keyed is shot on a blue or green screen. A keying filter is used to remove the blue or green color from the footage. The areas of the footage in which the color is removed become transparent, and the subject remains intact. The footage is then composited over a background element.

The following keying example uses an easy-to-key image as a motion graphics element. Keying in real life is rarely this simple. Since no keying filter automatically pulls a perfect key, you must make adjustments to the filter parameters once it is applied. Also, you must often use additional keying or matte filters, or use masks to remove portions of the image the key does not remove. Sometimes other tricks are employed, such as color correction and applied blurs. In this example, adjustments are made to the applied Primatte RT filter parameters to create a cleaner key.

Note: Keep in mind that results vary greatly depending upon the images in your project. This example merely provides an introduction to keying with the Primatte RT filter.

In the following example, an elephant is shot on a blue screen (or in this case, to be honest, the sky) and is to be composited onto an animated background as an element for a title sequence for a wildlife broadcast show.



Blue screen element

Background element

To create the composite, the blue screen element is positioned on top of the background element in the Layers list.

Blue screen element positioned over background element

Once the layers are positioned, a keying filter is applied to the blue screen element. The keying filter you select depends on the type of element with which you are working, as different filters yield better results on some types of shots than others. For more information on the keying filters, see Chapter 9, "Using Filters," in *Motion Help*.

Final composite

Once the color key is pulled and refined, the composite is complete.

To key a blue screen image:

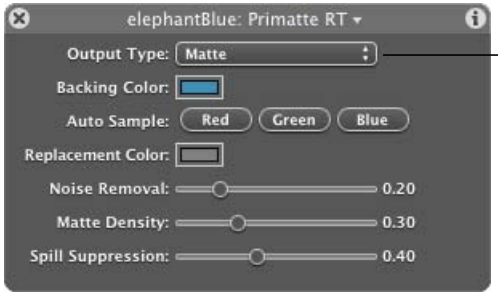
1. Import the blue screen image and the background image.
2. In the Layers tab, position the blue screen image above the background image.

   Note: You can also use the Bring to Front/Send to Back and Bring Forward/Send Backward commands in the Object menu.
3. In the Library, select Filters > Keying.
4. Select the Primatte RT keying filter and drag it to the blue screen image in the Canvas or Layers tab.

   The Primatte RT filter is added to the image and the blue color is automatically removed, creating transparency in the formerly blue area (an alpha channel is created). As a result, you can see the background on which the elephant is composited.

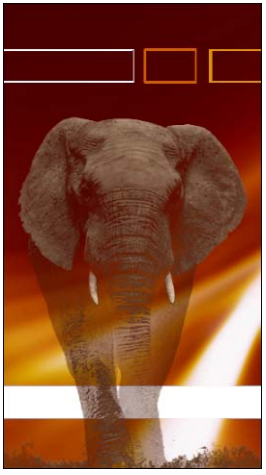
Adjust the Primatte RT parameters:

1 In the Primatte RT Dashboard, or the Inspector > Filters tab, choose Matte from the Output Type pop-up menu.



The matte is displayed in the Canvas. When the Primatte RT filter is first applied to the image, it automatically starts to pull the key. However, often the matte is not clean—there are many gray areas. Any dark areas of the matte result in transparency in the areas that should be opaque.

Initial matte with Output Type set to Matte



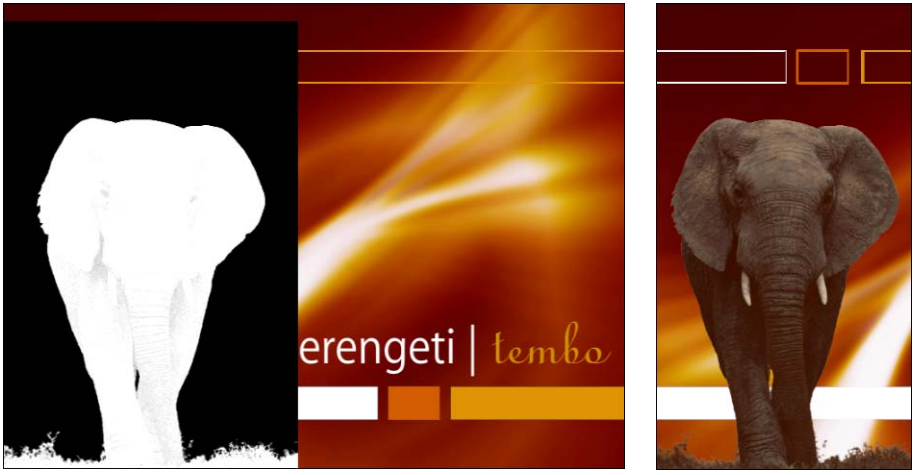
Initial matte with Output Type set to Processed Foreground (composite)

2 Clean up the matte in the Primatte RT parameters:

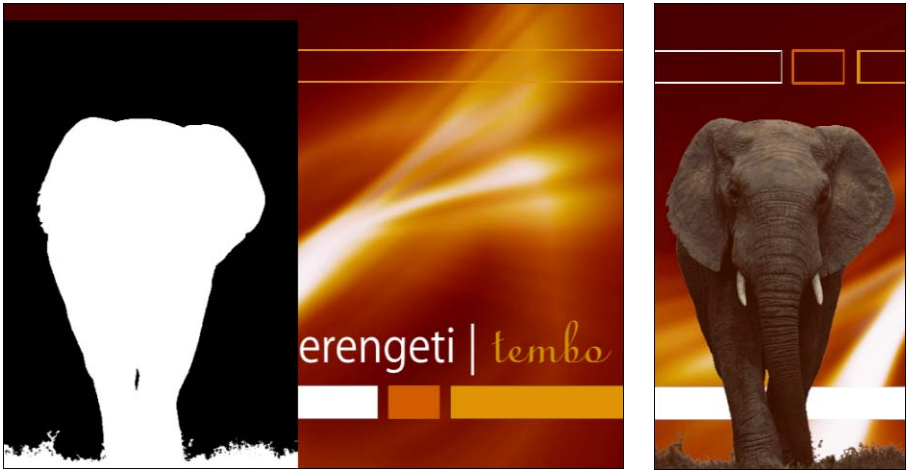
a In the Auto Sample parameter, click Blue. If using a green screen shot, click Green.

When the Primatte RT filter is first applied to an image, the image is auto-sampled and the best estimated keying color is inferred. By clicking Auto Sample, the dominant color in the image (between red, green, and blue) is automatically sampled and used as the keying color.

The matte is improved, but still has some problem areas.



b Drag the Matte Density slider slowly to the left until the areas that should be opaque become solid white.

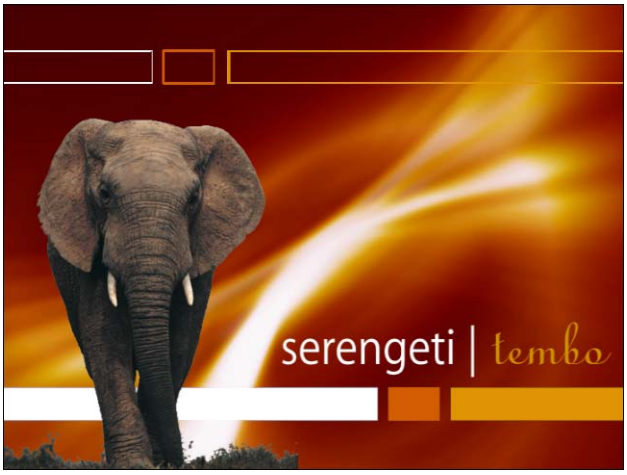


c Set the Output Type to Processed Foreground.

The composite is displayed. Often, the key is good, but the image color may be affected. In this example, the elephant's color is still too red. By default, Primatte RT applies an estimated spill suppression value.

d Drag the Spill Suppression slider until the subject's original color is returned.

Note: In the Primatte RT filter, the Matte Density and Spill Suppression values cannot be set to a value lower than Noise Removal.



Since the grass in the blue screen image is nearly the same color as the subject, it is not keyed out. To remove the grass in the lower portion of the foreground image, use a mask. This is discussed in the following section.

For more information on the keying filters, see Chapter 9, "Using Filters" in *Motion Help*.

Masking Layers and Objects

Masks are used to define a specific shape for a transparent area of an object. For example, you can use a mask to cut out a particular element from a shot, such as a cartoon character, and place the cut-out character above another layer in your project. Or, you can use text as a mask for an image or moving footage, so that the text object is filled with the image it is masking. Masks are also used to remove lights or other rigs from a shot (this is known as a *holdout mask*), or to remove rough portions of the key, often referred to as "dirt" (this is known as a *garbage mask*).

There are two ways to mask an object or layer in Motion. The first method is to draw a mask directly on the object you want to mask. The second method is to add an image mask to an object, then drag an object (an image, shape, text object, and so on) to the image mask. You can use any image, shape, or text object as an image mask source, as well as select a specific channel of the source image to use for the mask. The following examples briefly describe each method.

Note: Although you use different tools to draw masks and shapes, the controls for drawing and editing shapes and masks are identical. Once drawn, masks and shapes have different parameter sets.

Masking an Image

In the following example, a garbage mask is added to the matte from the previous "Creating a Key" section.

To mask an image:

1. In the Layers tab or Canvas, select the object with the applied keying filter, or the filter itself.

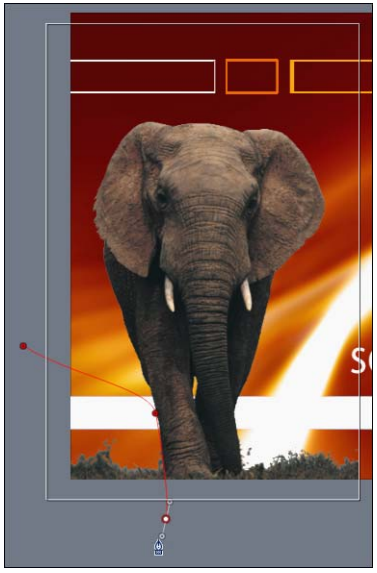
   In the Toolbar, the Mask tools become available.

2. In the Toolbar, select the Bezier (default) Mask tool.

Bezier Mask tool

   The pointer changes to a pen.

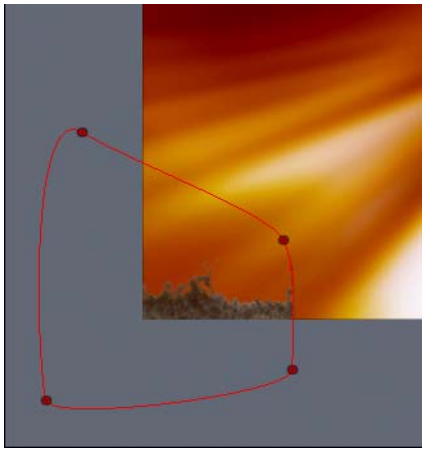
3. In the Canvas, click around the image area you want to remove (in this example, the grass at the elephant's feet).



   Note: To create tangent handles as you draw the mask, drag outward as you add the control points.

4. To close the mask, click the first point drawn, or press **C**.

Because masks are set to Add mode by default, the image outside of the closed mask is removed.

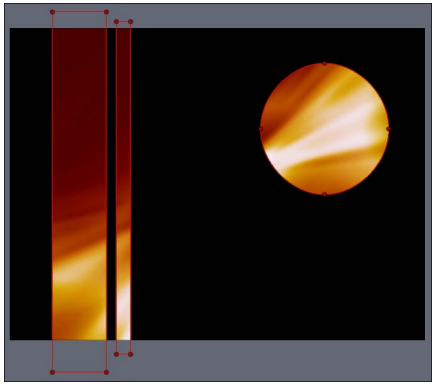


To remove the image inside the mask, you must set the mask to Subtract.

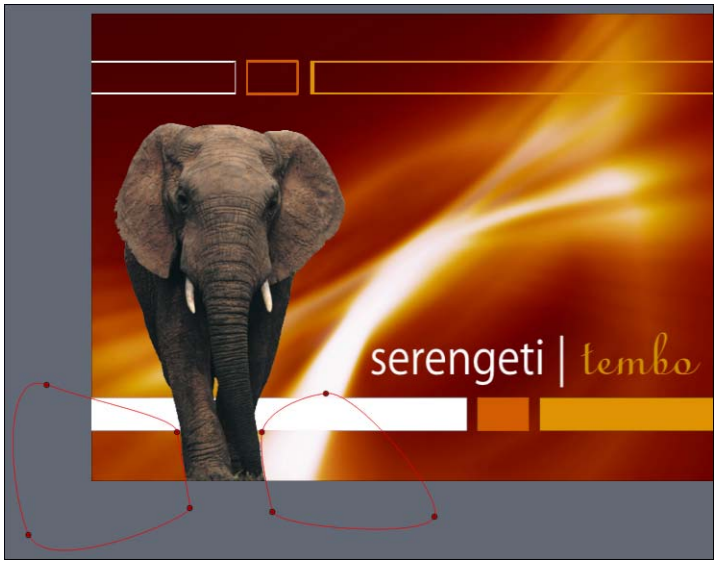
5 In the Mask Dashboard or Inspector tab, set the Mask Blend Mode to Subtract.

The image area inside the mask is removed.

Note: When a second mask is added, the blend mode of the second mask is also set to Add by default. In the following image, the first mask is set to the default Add mode. The following masks that are created are set to Add mode by default so that the mask adds to the alpha channel created by the first mask.



To remove additional "garbage" from a key, set any additional masks to Subtract mode.



Once the masks are applied, the grass (the white portion of the matte) that was left by the keying filter is removed from the alpha channel of the elephant image.

Editing Mask and Shape Control Points

Use the following guidelines to edit mask and shape control points.

To move a control point:

- In the Canvas, drag the point.

To add a control point:

- Press **Option**, then position the pointer over the area of the mask or shape edge in which you want to add the point, then click. You can also double-click the edge to add a control point.

To remove a control point:

- Select the point, then press **Delete** (or **Control**-click, then choose Delete Point from the shortcut menu).

To create tangent handles, do one of the following:

- While drawing the shape, drag as you add control points.
- To create handles after a shape is drawn, press **Command** and drag the control point outward.

To break tangent handles:

- Press **Command,** then drag the end of a handle.

To reset tangent handles:

- Press **Command** and drag the end of a handle.

To change a control point from smooth to linear:

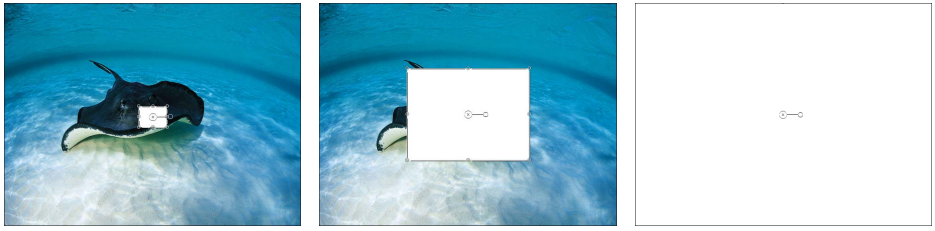
- **Control**-click the point, then choose Smooth or Linear from the shortcut menu.

For more information, see Chapter 11, "Using Shapes and Masks," in *Motion Help*.

Using a Shape as a Mask

In the following example, an animated rectangular shape is applied to an image as an image mask. The shape grows over time, and is used as a "wipe" to reveal the image below the masked image in the layer stack.

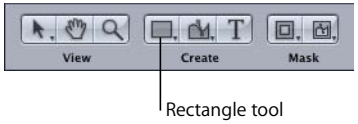
The following images show the animated rectangle shape before it is applied as a mask to the stingray image (in order to reveal a dolphin image below the stingray image in the layer stack).



Once the animated shape is applied as a mask to the stingray image, the dolphin image is revealed.

To create a rectangular shape:

1. In the Toolbar, select the Rectangle tool (or press **R**).



The pointer changes to a "+".

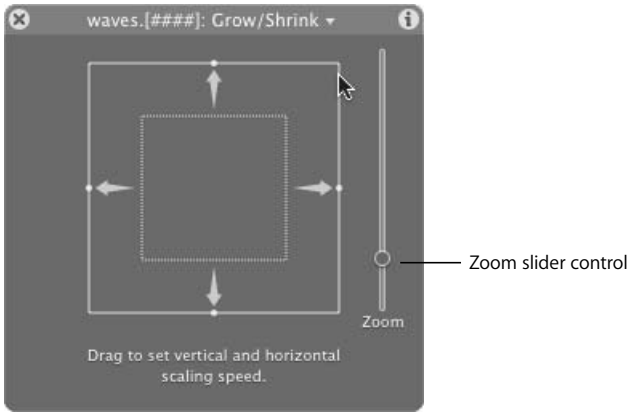
2. Drag in the Canvas.

Note: Press **Shift** while drawing the shape to constrain the shape's proportions.

To animate the scale of the rectangular shape:

1. In the Behaviors > Basic Motion subcategory, select the Grow/Shrink behavior.
2. Drag the Grow/Shrink behavior to the shape (in the Canvas or Layers tab).
3. In the Dashboard, drag the box outward to scale up the shape.

Note: To increase the rate of a behavior once its Dashboard controls are moved to their limits, drag the Zoom slider to zoom out of the Dashboard controls to allow greater grow or shrink rates.

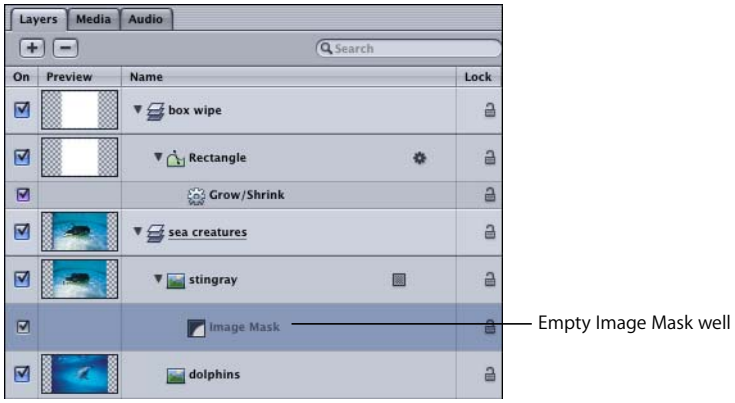


The shape grows over time at the rate set in the Dashboard.

To use a shape as a mask:

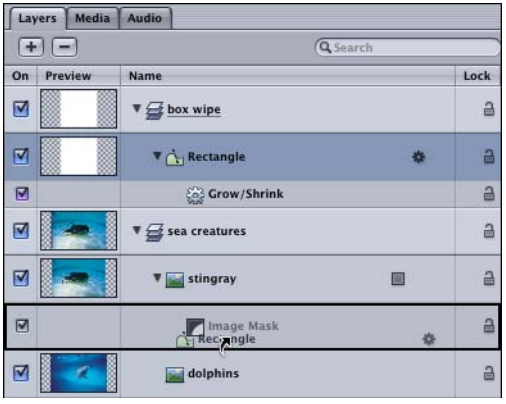
1. Select the layer or object you want to mask.
2. Choose Object > Add Image Mask (or press **Shift+Command+M**).

In the Layers tab, an image mask is added to the selected object. At this point, no mask has been applied.

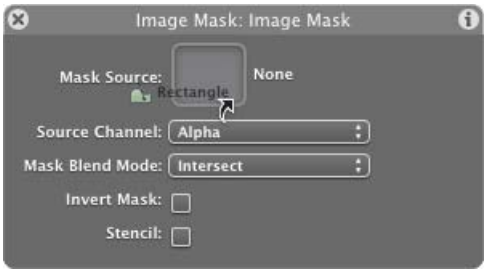


3 Do one of the following:

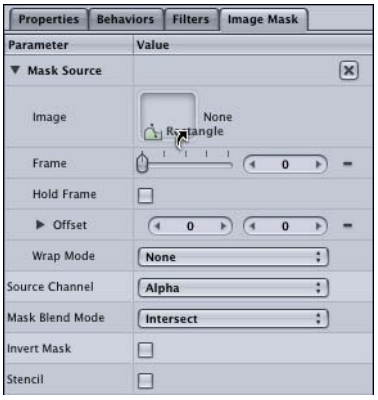
- In the Layers tab, drag the name of the shape that you want to use as a mask to the Image Mask object. When a black outline appears around the Image Mask object and an arrow appears next to the pointer, release the mouse button.



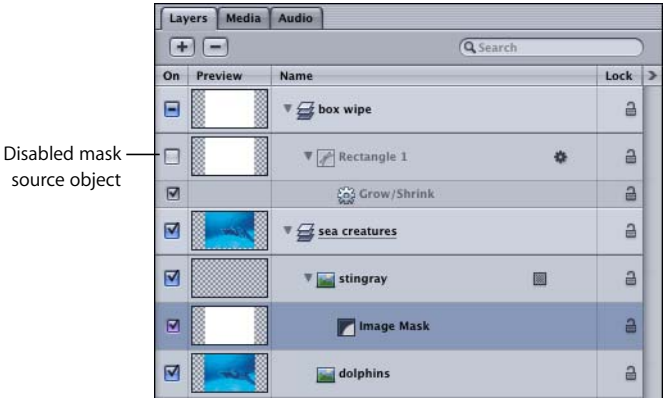
- In the Image Mask Dashboard, click-drag the shape that you want to use as a mask to the Mask Source well (drag the name of the shape from the Layers tab).



- Display the Mask tab in the Inspector. Click-drag the shape that you want to use as a mask to the Image well in the Mask Source parameters (drag the name of the shape from the Layers tab).



Since the default Mask Blend Mode is set to Add, the shape masks the stingray image and reveals the image below the stingray (the dolphin image). Once an object has been applied as an image mask, the original object is disabled in the Layers tab.



4 To reveal the dolphin image using the animated mask, you can do one of two things:

- Change the Mask's Blend Mode to Subtract.
- Invert the mask.

Stencil is turned on by default. When using an animated shape, text object, or image as a mask source, Stencil allows the mask to respect the changes in the image mask source object. In this example, the shape that is used as the mask source is transformed by the Grow/Shrink filter. Stencil must also be turned on for mask source objects that are animated using keyframes. If Stencil is not turned on, the original size and position of the source mask are used (no animation is present in the mask).

Note: The method for using an image or text object as a mask is the same as using a shape as a mask. Also, you can apply multiple image masks to the same object.

For more information, see Chapter 11, "Using Shapes and Masks," in *Motion Help*.

Audio

Music can give life to your motion graphics project—sometimes it is a requirement, other times it just gives you a bit of inspiration. In Motion, you can import audio, slip tracks to sync audio to your project, and mix audio levels.

The supported audio file formats include AIFF, WAV, MP3, VBR (Variable Bit Rate) MP3, and AAC (M4A).

Note: AAC files purchased from the iTunes Music Store are not supported.

You can work with audio in the Audio tab (located in the Project pane), the Timeline, and the Audio Editor.

Adding and Removing Audio Files

This section provides a quick overview of how to add and delete audio files.

To import an audio file, do one of the following:

- In the File Browser, select the audio file you want to import and drag the file to the Canvas or Project pane.

  You can also click the Import button in the Preview area.

- In the Audio tab, click Add (+), select the audio file in the Import dialog, then click OK.

The audio file is added to the project, and appears in the Audio tab of the Project pane and in the Audio Editor. If the Show Audio button is enabled, it also appears in the Timeline.

You can also import audio that is embedded in a QuickTime movie file, without the associated video footage.

To import only the audio from a QuickTime movie:

1. In the Library, select the QuickTime movie file.
2. Drag the file to the Audio tab (located in the Project pane).

   The audio from the movie is added to your project without the video footage. To import the video and the audio in a QuickTime file, import the file as you would any other media file.

   Note: You can also use the Add (+) button in the Audio tab.

To delete an audio file:

1. In the Audio tab, select the audio file that you want to remove.
2. Do one of the following:
   - Click the Delete button (–) at the top of the Audio tab.
   - **Control**-click the audio file, then choose Delete from the shortcut menu.
   - Press **Delete**.

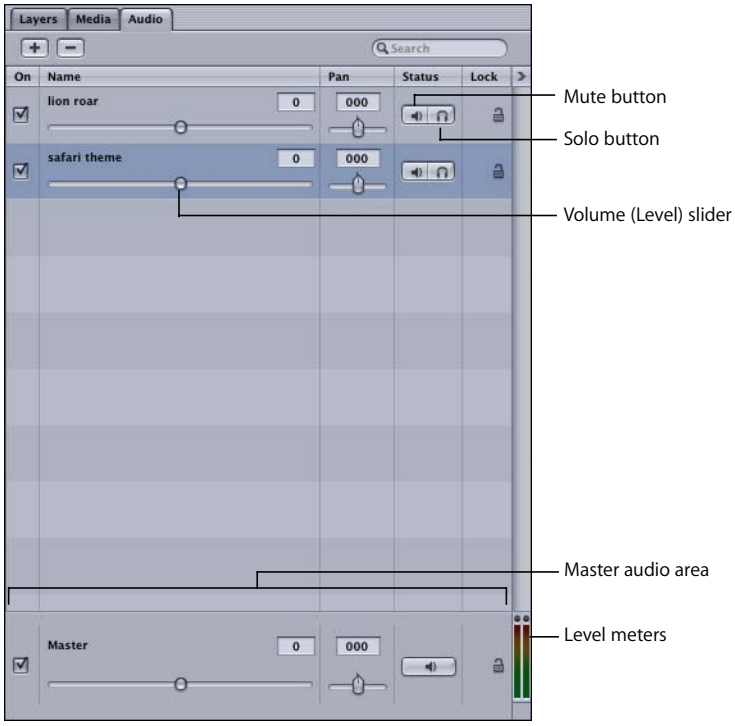
Audio Tab

Use the Audio tab to view the list of all audio tracks in your project, modify audio volume (gain) and panning (balance), turn tracks on or off, mute or solo a track, add and remove tracks, and search for tracks. The Audio tab also contains the Master audio controls, which determine the final mixed output of all active audio tracks in your project.

To display the Audio tab:

- In the Project pane, click the Audio tab.

All loaded audio tracks are listed. The following image shows the Audio tab controls.



To enable the Master audio controls:

- In the Audio tab, click in the Master audio area.

The Master audio track is selected. This track represents the automatic sum of all audio tracks in your project.

Audio Editor

The Audio Editor lets you play back the audio in your project independently of the Canvas. You can also control the audio playback, set In and Out points, and set keyframes for volume and panning. The Audio Editor also displays a waveform area on which the editable audio curves appear.

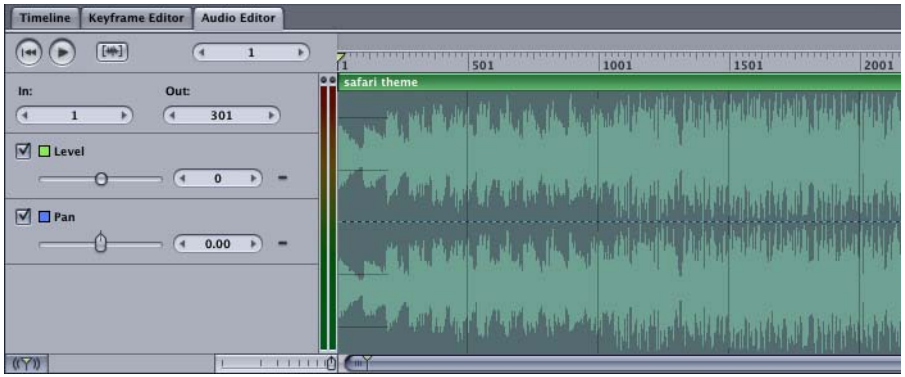
To display the Audio Editor:

- In the Timing pane, click the Audio Editor tab.

To display an audio waveform:

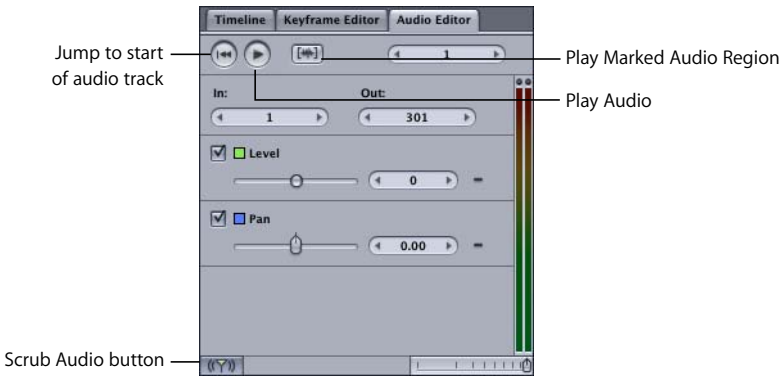
- With the Audio Editor open, select an audio file in the Audio tab of the Project pane.

The Audio Editor displays the waveform for the selected audio file.



Transport Controls

Use the transport controls in the Audio Editor to play the audio files in your project. You can also rewind to the beginning of the file, pause, or stop playback.



To play an audio track:

1. In the Audio tab, select the track you want to play.
2. Click the Play button.

   The Play button changes to a Pause button.
3. Get down, get funky.

   Note: If the Play Region button is enabled, the playback starts from the In point of the specified region and plays to the Out point in the Audio Editor (not in the Timeline).

To pause or stop playback:

- During playback, click the Pause button.

  The audio playback is paused at the current location. The Pause button changes back to the Play button.

To play from the start of a track:

- Click the Rewind button.

  Note: If the file has been trimmed, Rewind takes you to the starting trim point.

To play a range of frames:

1. Turn on the Play Region button.
2. Type the start frame number in the In field, and the end frame number in the Out field.

   The audio track is trimmed to match the defined play region.
3. Click Play.

To play from a specific frame:

1. In the Audio Editor, click in the numeric field to the right of the transport controls and type the frame number at which you want to start playback.
2. Click Play to play the project back from the specified frame.

Scrubbing and Slipping an Audio Track

You can slip audio tracks in the Audio Editor, Timeline, or mini-Timeline. Clips can also be scrubbed in the Audio Editor and Timeline.

To slip an audio track in the Audio Editor:

1. In the Audio tab, select the audio file.
2. In the Audio Editor, drag the green audio track (located below the Timeline ruler).

   Note: To slip a track in the Timeline or mini-Timeline, drag the audio track left or right.

For more information on using audio in Motion, see Chapter 12, "Working With Audio," in *Motion Help*. For information about rendering audio, see Chapter 13, "Exporting Motion Projects," in *Motion Help*.

Saving and Exporting Your Project

Exporting your project is the final step in the creation of your masterpiece (and often means it's time to go home). This section briefly describes exporting a project as a QuickTime movie. For more information on exporting, see Chapter 13, "Exporting Motion Projects," in *Motion Help*.

To export a project:

1. Set your project duration to the frames that you want to render.

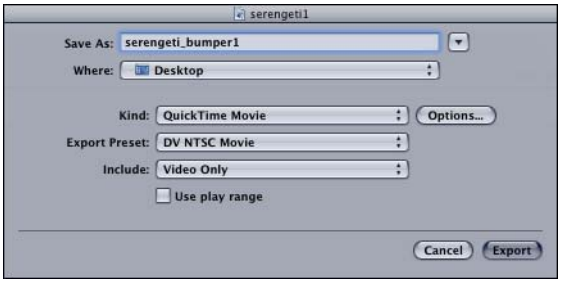
   Important: By default, Motion exports all of the frames in a project. To render only a portion of your project, set your playback range before you export your project. For information on setting a playback range, see *Motion Help*.
2. Choose File > Export (or press **Command+E**).

   The export sheet drops down from the title bar.

Note: If you have installed Compressor, you can choose Export using Compressor. Using Compressor allows you to batch render a project.

3 Use the following guidelines to assign your export settings:

- **Save As:** Type the filename for your output file in the Save As field.



- **Where:** Use the Where pop-up menu to navigate to the folder where you want to save the file. To show the system browser, click the arrow button to the right of the Save As text field.

Note: Keep in mind that when exporting image sequences (such as a Targa sequence), you should have a separate folder for each project export.

- **Kind:** Use the Kind pop-up menu to choose an export format, such as QuickTime Movie or Image Sequence. This example uses the default QuickTime Movie format.
- Click Options to set more options for your export format, such as compressor type and quality. Click Advanced to set further options, such as depth and frames per second.
- **Export Preset:** Use the Export Preset pop-up menu to select an export preset for your render. You can create your own presets in the Presets pane of Motion Preferences.

- **Include:** Use the Include pop-up menu to choose to export video with audio, only video, or only audio with your render.
- **Use play range:** Turn on the "Use play range" checkbox if you have set a play range, rather than the entire project, to be exported.

4 Click Export.

The Export Progress dialog appears.

When the export is completed, the Export Progress dialog closes.

Learning More About Motion

This tour provides an overview of the Motion interface, general workflow, and features. The following additional pieces of documentation are available for further information:

Motion Help

Motion Help provides an in-depth look at all Motion features, including their use and all parameter descriptions. To access *Motion Help*, choose Help > Motion Help.

Motion Tutorials

Motion Tutorials provide lessons in the use of Motion features. To access the introductory tutorial, choose Help > Motion Tutorial. You can also select "Begin with a Tutorial" in the Motion Welcome Screen. Additional tutorials will become available online at http://www.apple.com/motion. To access the latest tutorials, choose Help > Motion on the Web. Check back frequently for new Motion tutorials, new information, and other goodies.

Motion Late-Breaking News

Motion Late-Breaking News provides up-to-the-minute news and information about the latest Motion releases. To access the Late-Breaking News, choose Help > Late-Breaking News. You must be connected to the Internet to view this document.