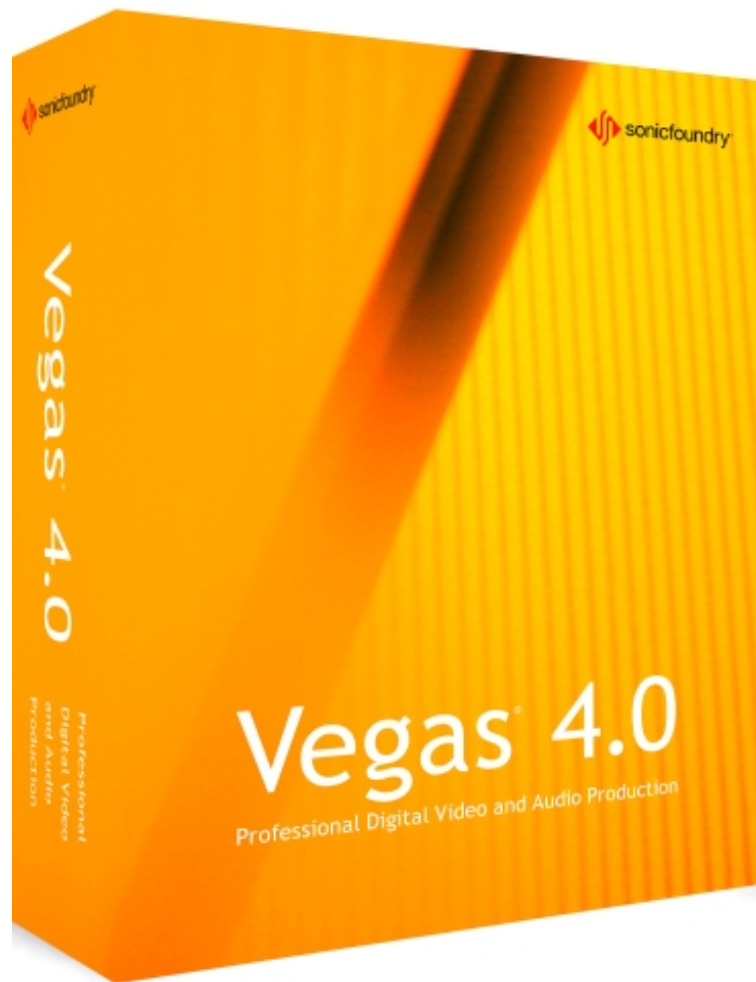


Vegas 4.0

learn to use the new features



A tutorial approach to mastering powerful new video, audio, editing, and media-management features, as well as exciting scripting capability that enables you to customize Vegas for your specialized editing needs.

Vegas 4.0: learn to use the new features

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Introduction

This document takes a close look at the new features that make the 4.0 upgrade to Vegas the most exciting entry into the video and audio production arena in a long, long time. When you're finished with this document, you'll have an excellent understanding not only of what the new features are, but more importantly, how to use them.

You'll learn about powerful new video and audio features, as well as new editing and project-management techniques that make editing in Vegas even easier, faster, and more fun than ever before. You'll also learn how application scripting in Vegas opens up a whole new world of possibilities for those who've always longed to customize their Vegas functionality.

The new features have been so expertly integrated into the program, and are so logical and easy to learn and use that you might not immediately notice how powerful and useful they are. But before long you'll realize what thousands of loyal Vegas users and countless beta testers already swear by: Vegas is a professional tool for creating top-notch video and audio projects.

We've made the assumption throughout this document that you are at least moderately familiar with previous versions of Vegas. If that's not the case, you'll still be able to follow along, but you might need to consult the printed manual or the on-line help files to fill you in on how to accomplish a task that we take for granted. For the real beginner, we've written *Digital Video and Audio Production: a guide to creating rich multimedia with Vegas*. This valuable primer gets you up and running fast, and lays a strong groundwork of the basics of working in the application. The first printing of the book covered Vegas 3.0, and the 4.0 revision is in the works to be available soon. Check the *Books and Training* section at <http://www.sonicfoundry.com/products> for more details.

Thank you for your interest in Vegas 4.0. We're convinced that you'll enjoy and appreciate all of the new features found in this new version.

Gary Rebholz and Michael Bryant

I: Video



Color-correction filters: Sonic Foundry Color Corrector

Vegas 4.0 now boasts two powerful new color-correction tools that enable you to make highly accurate and professional color adjustment to your video clips. Especially when used in conjunction with the video scopes (discussed later), these color correction tools make working with colors in your videos easy yet powerful. We'll talk about the *Sonic Foundry Color Corrector* in this section, and the *Sonic Foundry Color Corrector (Secondary)* in the following section.

Use the *Video FX* window or the *Event FX* button to apply the *Sonic Foundry Color Corrector* filter to an event. The *Color Corrector* filter, shown in **Figure 1.1**, contains three color wheels. The first wheel on the left adjusts the color for the low tones in your video (for example, shadows and other dark areas). The middle wheel adjusts the midtones (for example colors of medium brightness such as a neutral blue or green), and the wheel on the right adjusts the high tones (for example, areas of the video that are in bright light or contain bright colors such as yellow). On each wheel, adjust the white point at the center of the wheel to pick from a range of colors (the hue value) that runs counterclockwise from blue to magenta to red to yellow to green to cyan, and specify how much of that color (the saturation amount) you want to add to the affected tone range.

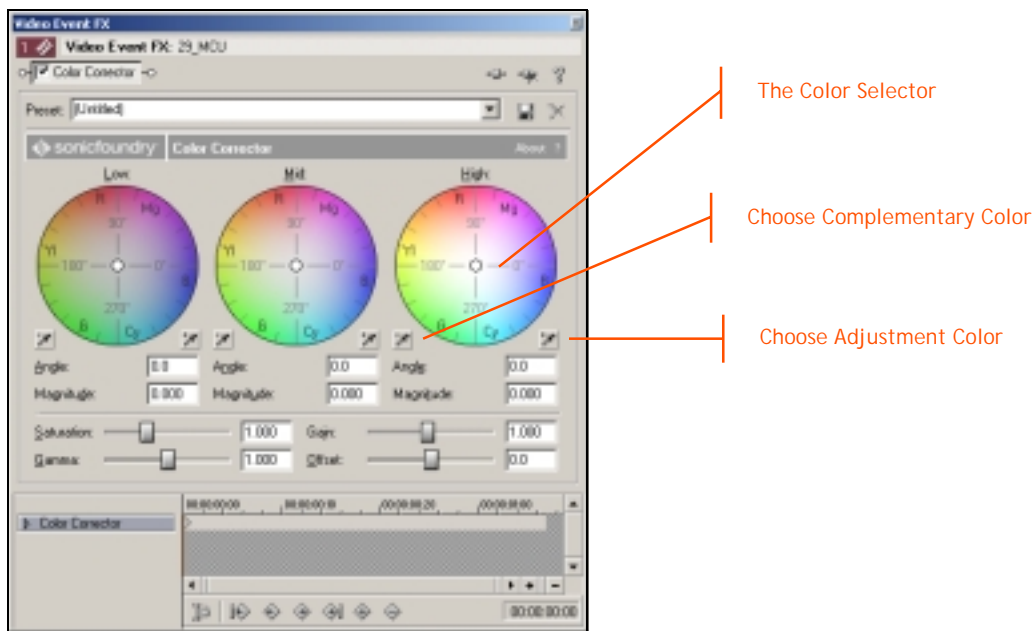




Figure 1.1

The *Sonic Foundry Color Corrector* filter gives you independent control over the low, mid, and high tones of your video.

The angle at which you drag the color selector determines the hue you add to the tone, and the point's distance from the center of the color wheel determines the saturation (or amount) of the color you add. The farther you drag the point from the center, the more saturated your video clip becomes with the hue toward which you drag. For example, to add more Red to the mid tones of your video, drag the point for the *Mid* color wheel toward the *R* just inside the edge of the color wheel (just over the 90-degree mark). As you drag the point, the values in the *Angle* box (which indicates the hue value) and the *Magnitude* box (which indicates the saturation value) update dynamically. You can also enter values directly into these text boxes to change hue and

saturation. Double-click the point to reset the *Angle* and *Magnitude* values to 0.0 (that is, no color added).

A **Choose Complementary Color** eyedropper tool  exists for each color wheel (refer to Figure 1). This tool enables you to sample a color from anywhere on your screen. Each color has a complementary color. Colors that appear exactly 180 degrees apart on the color wheel are complementary. For instance, yellow is the complementary color to blue, and red is complementary to cyan. When you use this tool to sample a color, the tool adds that color's complementary color to your video clip for the affected tone. For example, use the red solid color preset in the *Text/Backgrounds* window to add a red event to a project. Add the *Color Corrector* filter to the event. Click the **Choose Complementary Color** tool for the low tones, and click on the red event in your timeline. This adds the maximum value of cyan to the low tones of your video clip, which has the affect of neutralizing the red to some extent. The red event now looks much darker.

Click the **Choose Adjustment Color** eyedropper tool  for the desired color wheel, and then click a color on your screen. This samples the color on which you clicked and adds it to the video clip.

The **Saturation** slider adjusts the video clip's overall saturation. Raising the saturation level creates more vibrant and intense colors. Lowering the saturation level essentially removes all color, giving you a black-and-white image.

The **Gamma** slider adjusts the overall brightness of the video. A higher setting brightens the video.

The **Gain** slider multiplies the luminance values by the gain setting. This has the general effect of lightening the video (raising the gain value) or darkening the video (lowering the gain value.)

The **Offset** slider enables you to set an offset value to be applied to all luminance values in the video. This provides another method of lightening or darkening the video.



Color-correction filters: Sonic Foundry Color Corrector (Secondary) ---

The *Sonic Foundry Color Corrector (Secondary)* Correction filter, shown in **Figure 1.2**, enables you to define a range of colors within your video to which you want to limit the color adjustments you make. With this tool, you can make very specific color adjustments to portions of the video without affecting other portions. Add the *Sonic Foundry Color Corrector (Secondary)* to an event in your project. Try to pick a video clip that has a large area of solid color such as a red car, a blue wall, or a green shirt.

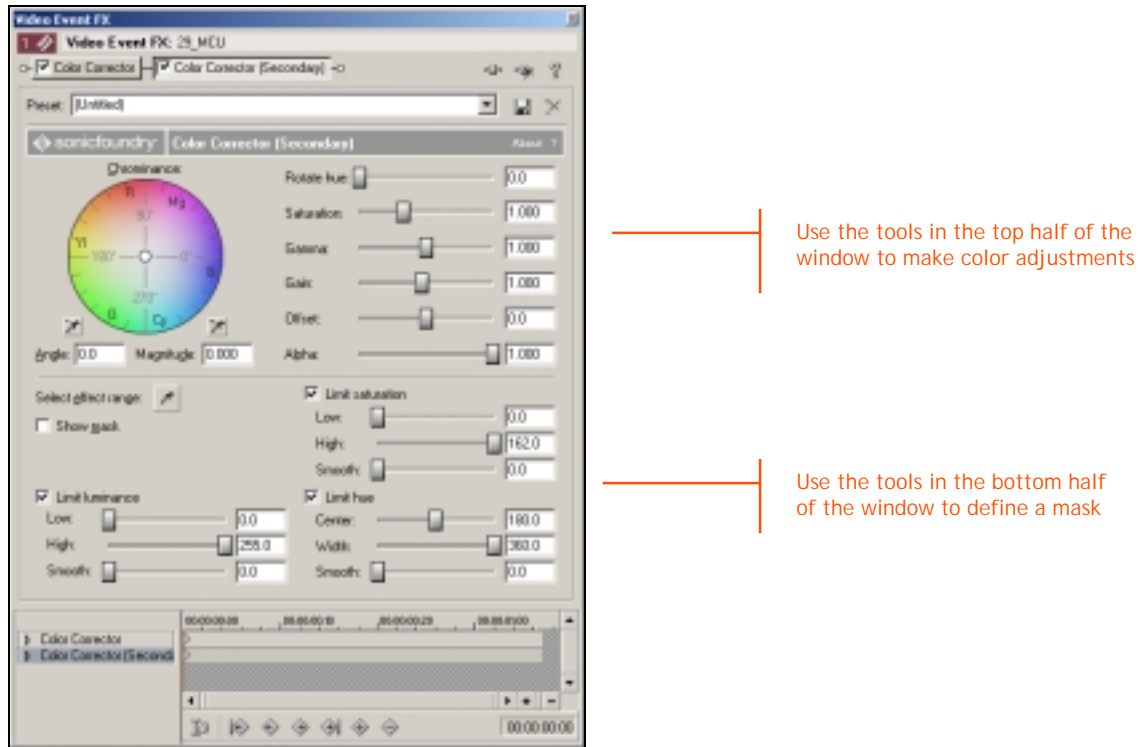



Figure 1.2

The *Sonic Foundry Color Corrector (Secondary)* filter enables you to isolate specific portions of your video to pin-point your color corrections.

Using the Secondary Color Corrector is a two-step process. First, use the controls in the bottom half of the filter's interface to define the area of the video that you want to affect. Then, use the tools in the top half to make the desired color adjustments.

Let's break these two general steps into specifics. First, add the Secondary Color Correction filter to the event you want to work with. Click in the timeline to place the cursor within the event. As usual, the frame shows up in the *Video Preview* window. Usually, you can define the area you want to affect fairly closely with the **Define Effect Range** button . Click the button, then click and drag inside the *Video Preview* window over a portion of the area that you want to correct. For example, if you want to color correct a wall in the background of the video, click and drag over a portion of the wall without including anything other than the wall. You've just defined a *mask*, that is, the range of colors that the filter will act upon when you start making color adjustments. Select the **Show Mask** check box to see how accurately you've defined the desired area.

Usually, you'll notice that the area is not perfectly defined. You'll need to fine-tune it so that you affect only the object you want (in this case, the wall) and not other objects in the video that may share similar colors. First, you might try sampling different portions of the object. Try larger and smaller sample areas to see which gets you closest to a perfect mask. Then, make adjustments to the various controls in the **Limit Luminance**, **Limit Saturation**, and **Limit Hue** sections until you've isolated the object you want to color correct as completely as possible (it may not be possible to define the area perfectly, but experiment with different combinations of these controls, and you should be able to get very close in most cases.) There's an art to defining a good

mask. The process requires a lot of experimentation with the different settings, but with a little experience, you'll soon begin to learn what works and what doesn't.

Once you're satisfied that you've defined the mask as accurately as possible, clear the **Show Mask** check box. Now you're ready to make the color adjustments. The color wheel provides the easiest method for making color adjustments. You're already familiar with the color wheel from working with the *3-wheel Color Correction* filter in the previous section. The color wheel in this filter works exactly the same way. Reposition the point to define the hue and luminosity of the color correction. Notice that the color changes affect only the area you defined with the mask. The **Choose Complementary Color** and **Choose Adjustment Color** buttons work exactly as described in the previous section.

The **Rotate Hue** fader changes the angle assigned to the colors on the color wheel. For instance, with this fader set to 180 degrees, each color on the wheel now occupies the position exactly opposite of its default position on the wheel, so that red now occupies the position formerly held by cyan.

Drag the **Saturation** fader to the right to make the colors more vibrant, or to the left to tone the colors down a bit. A very low saturation setting allows some of the original color to "bleed" through the color you're adding with the filter. This combination of the original color and the color-correction color can allow you to add just a "touch" of the new color to the object. A high saturation setting causes the corrected color to completely override the original color.

The **Offset**, **Gamma**, and **Gain**, sliders work as described for the *Color Corrector* filter. Adjust the **Alpha** slider to raise or lower the Alpha value of the mask. The Alpha value represents transparency. An Alpha value of *1.000* makes the mask totally opaque, while a value of *0.000* creates a completely transparent mask. To see the effect of the Alpha setting, place another video clip on a new track below the one to which you are applying color correction. As you lower the Alpha value, you see the clip on the lower track begin to show through the mask.



Video scopes: Waveform/Vectorscope/RGB Parade/Histogram

The new video scopes in Vegas 4.0 give you the tools you need to precisely analyze and adjust your video. They become especially helpful when you use them as guides while making adjustments with the color-correction filters and when checking to make sure that your video meets broadcast-safe specifications. (Colors that fall outside of the broadcast-safe range may cause audible interference on the viewers' television. Most broadcasters have strict requirements that dictate how closely your video must meet the broadcast-safe standard before they'll agree to air your video.)

Vegas 4.0 includes four different scopes: *Vectorscope Monitor*, *Video Waveform Monitor*, *Histogram*, and *RGB Parade Monitor*. To open the scopes window, choose **View | Video Scopes**. The *Vectorscope Monitor*, shown in **Figure 1.3**, opens as the default scope.

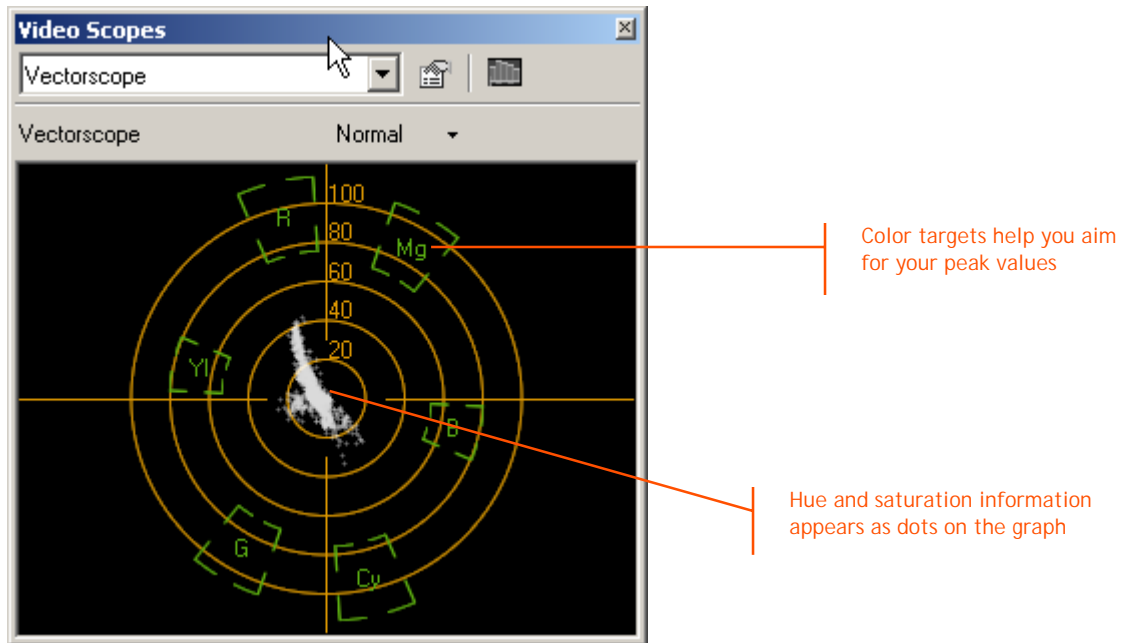


Figure 1.3

Use the *Vectorscope Monitor* to make sure your video is broadcast safe and for color correction.

The *Vectorscope* displays targets that represent broadcast-legal saturations of red, magenta, blue, cyan, green, and yellow. The scope plots hue and saturation information that displays individual colors in your video as dots in the *Vectorscope* field. Just as with the color wheels you learned about earlier, a dot's angle (the angle of a line drawn from the dot to the center of the scope) defines the color's hue, and the dot's distance from the center of the scope defines the color's saturation. You can view the general trend in the distribution of dots to the most prominent color. For instance, if the dots tend toward the red target, your video has a red cast. Any dots that appear beyond a target represent colors that fall outside of the legal broadcast range. You can then use the various color-correction filters in Vegas to change the cast of the video or bring out-of-range colors back to legal levels.

The *Video Waveform Monitor* scope, shown in **Figure 1.4**, shows the luminance of the current frame of your video signal. Remember from our discussion of the color correction filters that luminance can be thought of as brightness. This scope aids you in both matching the brightness of two clips and verifying that your video stays within the broadcast-safe range. For instance, you can use the split-screen preview techniques (described later in this document) to view two different video frames simultaneously—one whose color you're happy with, and another that needs brightness correction. Looking at the scope, you can determine whether the video is too light or too dark. If the majority of the luminance values are low on the monitor, your video may be too dark. If the majority of the values are high, your video may be too bright. You can then use your favorite Vegas color-correction filter to adjust the brightness of the clip until its luminance values are distributed more evenly around the vertical center of the scope, and hopefully more closely match the values of the good clip. You can then use the *Video Preview* monitor to make sure that you like the results of your corrections.

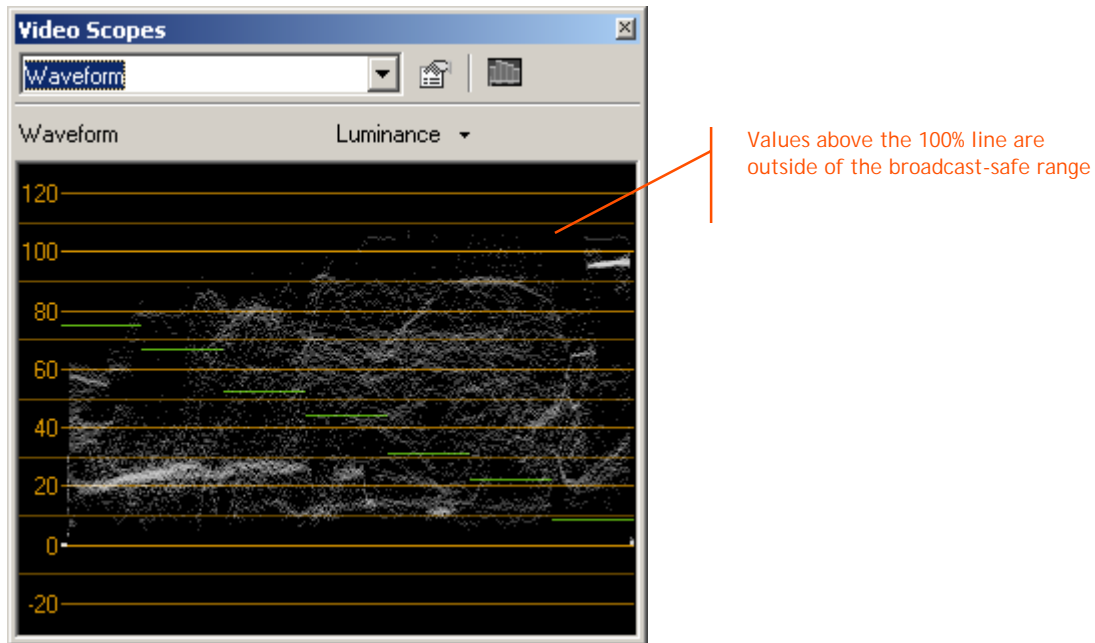


Figure 1.4

The *Video Waveform Monitor* makes it easy to see if your video's luminance values are outside of the broadcast-safe range.

The *Histogram Monitor*, shown in **Figure 1.5**, displays the color levels and contrast of your video. It provides another way for you to check that your colors are all within the legal broadcast range and to monitor the overall balance of your video. Use the drop-down menu (just above the display area) to display values individually for *Luminance* (the brightness of your video), or red, green, and blue tones, or Alpha values (the transparency of your video). A composite display option consists of Luminance/Red/Green/Blue. In general, your *Histogram* display should be balanced. That is, the graph is fairly well distributed horizontally across the display, and the highest peaks are not radically different from the lowest. If the graph tends mostly to the left, your video may be underexposed and look dark. A graph that is concentrated toward the right might indicate overexposure. A graph that is very low on both ends and mostly concentrated in the middle of the display might indicate low contrast problems resulting in a faded image, while a graph that is high on both ends but very low toward the middle might indicate high contrast problems. Again, you can use the various color correction filters to help solve problems indicated in the *Histogram Monitor*.

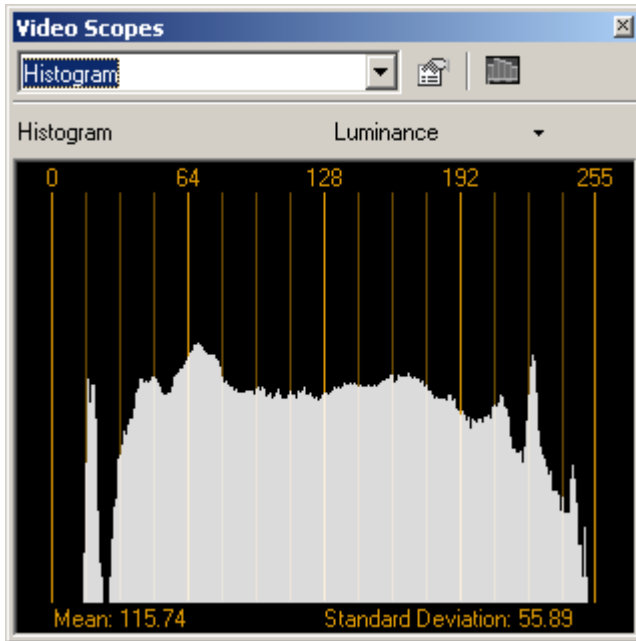


Figure 1.5
Check your color levels and contrast with the Histogram Monitor.

The *RGB Parade Monitor*, shown in **Figure 1.6**, isolates each of the three colors that make up your video (red, green, blue) on a three-part display that plots the values of each color from 0 to 255. This helps you determine whether you have any problems with the individual color channels in your video.

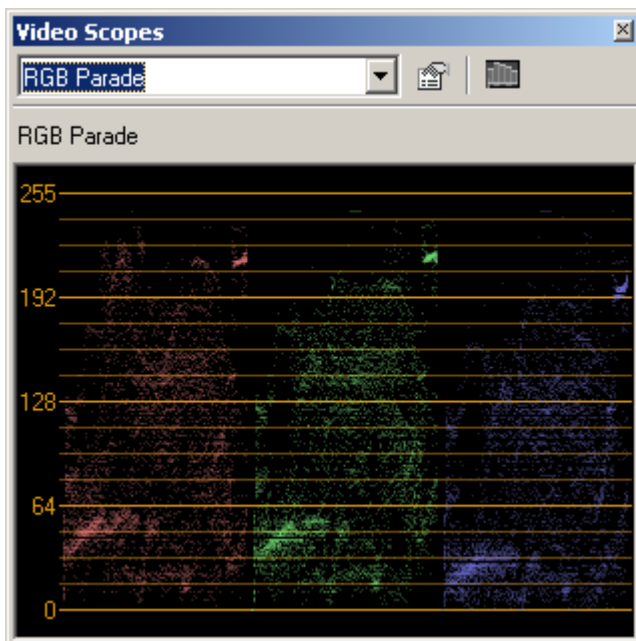


Figure 1.6
Use the RGB Parade Monitor to isolate the red, green, and blue channels.



New transitions, effects, and generators

Vegas 4.0 includes many exciting transitions, filters, and media generators. The lists below summarize those are new with Vegas 4.0 (or are included with Vegas for the first time free of extra charge). All are completely keyframeable to allow for even more creative possibilities.

New video filters include:

- Gradient Map—add or blend colors with original images to simulate solid or color grad lens filters, night vision, exposure errors, diachroics, and more.
- Saturation Adjust—Boost or cut a specific range of saturation levels.
- Film Grain—adds “grain” to your video to achieve more of a film look. Also useful for matching video and film clips in the same project as well as grain matching between various film stock.
- News Print—makes your video look as if it was scanned from a color photo, offset print, newspaper, magazine, or halftone.
- TV Simulator—simulates sync and scan errors, phosphorescence, static, interference, and more to give your video the look of an old TV show.
- Enhanced Broadcast Colors—adjusts luminance and chrominance values to bring the colors in your video back into the broadcast-acceptable range.
- Channel Blend—The Channel Blend filter enables you to manipulate the red, green, blue, and alpha channels of your video individually in order to achieve color correction and special effects, such as isolating one or more of the channels, remapping the characteristics of one channel to a different channel, and more.
- Bump Map—adds texture to your video, and enables you to control bump height, lighting type, lighting direction, and more to create 3D effects.

New transitions include:

- 3D Fly In/Out--cause the new image to fly in or out with keyframeable perspective rotation and specular lighting.
- 3D Shuffle--shuffles images from front to back with adjustable specular lighting.
- 3D Cascade—creates rolling and twisting reveals of the next clip.
- 3D Blinds—gives the effect of complex “mini blinds” opening/closing to reveal the next clip.
- Flash—simulates strobe flashes or film camera start/stop flashes.
- Page Loop—creates the appearance of flying one video event in over the previous.
- Portals—creates a “jigsaw puzzle-like” effect where pieces of the next clip are added over the length of the transition.

New media generators include:

- Checkerboard—creates an interesting array of checked and striped patterns.
- Noise Texture—creates realistic-looking textures such as clouds, lava, metal, or wood. Also creates special-effect patterns.

Video bus track with motion blur and supersampling envelopes

You can now control various aspects of the video output with the new *video bus* track. To show the video bus track, choose **View | Video Bus Track**. The video bus track opens in a new section at the bottom of the *Track List* and timeline, as shown in **Figure 1.7**.

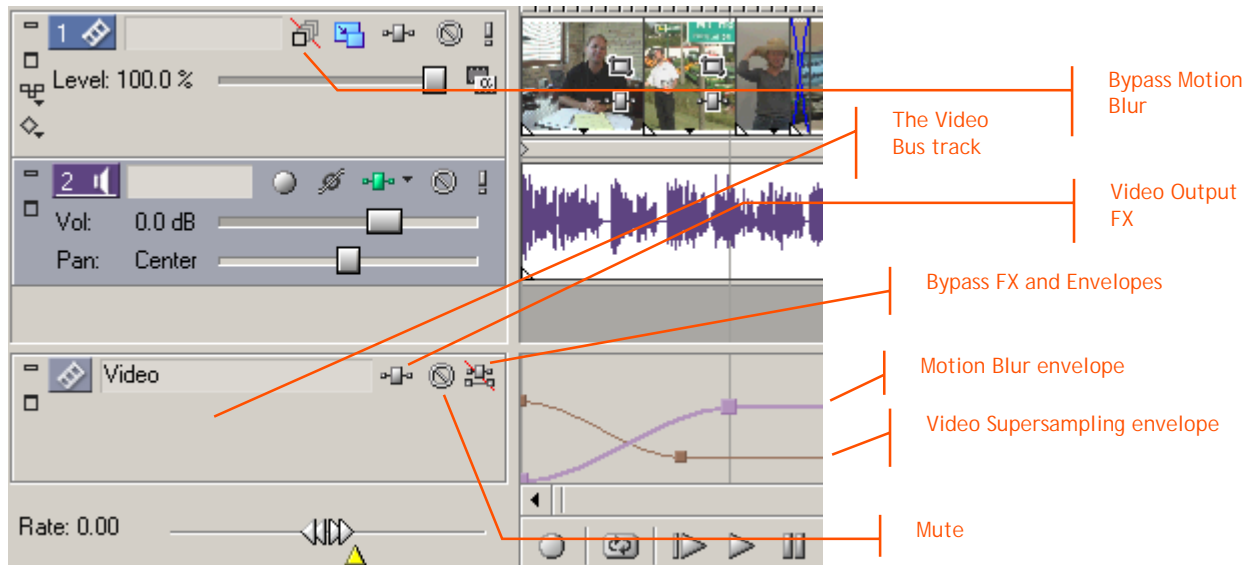






Figure 1.7

The video bus track appears in a new section below the Track list and timeline.

The video Bus track provides a convenient means of treating or manipulating the final video output of your project. In earlier versions of Vegas you could add video filters through the **Video Output FX** button on *Video Preview* window. The video bus track exposes more of the options available to manipulate your final video output before it routes to the *Video Preview* window or final render.


The video bus track header contains a number of familiar buttons. All of the buttons work the same on the video bus track as they do on regular tracks. For instance, to mute the entire video portion of your project, click the **Mute**  button on the video bus track header. The **Video Output FX**  button enables you to add video filters and effects to the video output of your entire project. For example, to turn your entire video to be black and white, add the *Sonic Foundry Black and White* filter here. Notice that the **Video Output FX** button on the video bus track header and the one on the *Video Preview* window (as in earlier versions of Vegas) accomplish the same task.

The **Bypass All Video FX**  button that used to appear in the *Video Preview* window in earlier versions of Vegas has been removed. To bypass all video effects in Vegas 4.0, click the dropdown arrow to the right of the **Split Screen View**  button and choose **FX Bypassed**. Now click the **Split Screen View** button to temporarily bypass all video FX.

Right-click the video track header track icon and choose **Insert/Remove Envelope** from the shortcut menu. The shortcut menu shows three options: **Fade to Color**, **Motion Blur Amount**, and **Video Supersampling**. The Fade to Color envelope works just like the *Fade to Color* envelopes that have appeared on individual video tracks for several versions of Vegas. Both the Motion Blur Amount and Video Supersampling envelopes can help improve the quality of

computer-generated animation sequences created (for example) by track motion and pan/crop movements.


Motion blur adds a blur to each frame of the video to give motion a more realistic feel. Choose **Motion Blur** from the shortcut menu to activate the motion blur envelope, which appears at the bottom of the track. Drag the envelope up to the level necessary to give the desired amount of motion blur. All of the techniques you know from working with track envelopes in previous versions of Vegas apply to the bus track envelopes. For example, you can add additional nodes to the envelope and adjust them differently in order to apply different motion blur amounts to different portions of your video.

You may not want to apply the motion blur to every track in your project. To prevent a track from being affected by the motion blur envelope, click the **Bypass Motion Blur**  button located on each individual video track's track header. Remember, to bypass the motion blur for the entire project, click the **Bypass FX and Envelopes** button in the video bus track header as discussed above, but remember that this also bypasses any video output effects.

Video Supersampling calculates intermediate frames between the project's frame rate to improve the appearance of computer-animated motion. This works especially well with video that contains slow motion, and also works in conjunction with the motion blur envelope to further improve the appearance of computer-generated animation sequences. Choose **Video Supersampling** from the shortcut menu, then adjust the envelope to achieve the results you want. Keep in mind that video supersampling can significantly increase your project's render time since you are asking your project to render more frames per second. You'll need to find the right trade-off between the benefits of supersampling and increased render times.



Smart resampling


 Many times, the frame rate of a video event does not match the Vegas project frame rate. This can happen when the video in the event was shot at a different frame rate than you are using in your project, or when you use a velocity envelope to create slow motion. You can determine how Vegas treats video with frame rates that differ from the project rate.


Right-click on an event, and choose **Switches** from the shortcut menu. At the bottom of the shortcut menu, notice that Vegas defaults to **Smart Resample**. With this option chosen, Vegas determines whether the calculated frame rate of the video in the event matches the project frame rate. If it does, Vegas does no resampling. If the frame rates are different (and your project frame rate is at least 24 frames per second), Vegas resamples the video in the event. This means that Vegas looks at two frames, and interpolates to create a new frame that acts as a transition between them. This process can help solve the problem of video that looks “jittery” due to low frame rates.

Leave the *Resample* switch set to **Smart Resample** if you want Vegas to determine whether or not the event needs resampling. Choose **Force Resample** if you want Vegas to resample the video in the event no matter what, and **Disable Resample** if you want to prevent Vegas from resampling the video clip.



Parent overlay composite filters

 Vegas 4.0 introduces three new parent overlay composite filters that you can use to create interesting compositing effects when establishing a parent/child relationship between two video tracks. To see how these work, set up a parent/child relationship between two tracks as in **Figure 1.8**. As in Vegas 3.0, when you create this relationship, the top track (the parent) becomes a mask for the lower track (the child). The default composite mode of *multiply* allows only the portions of the child track that appear under white areas of the parent track to be visible. Click the **Parent**

Overlay Mode  button and choose *Custom* from the menu to open the *Parent Track Overlay Plug-in Chooser* window. The *Plug-in Chooser* gives you three 2-to-1 composite mode types from which to choose: *Sonic Foundry Bump Map*, *Sonic Foundry Displacement Map*, and *Sonic Foundry Height Map*. Add *Sonic Foundry Bump Map*, and click **OK**.

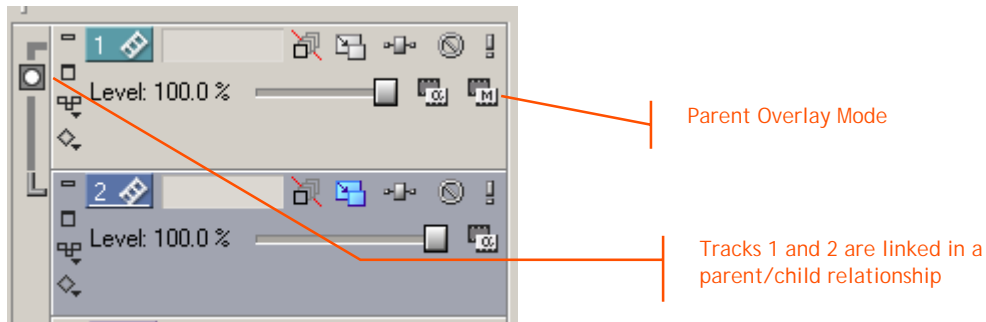


Figure 1.8

The Parent Overlay Mode button appears when you establish a parent/child relationship between two or more tracks.


The bump map adds texture and lighting effects to your video. Light areas of the parent image represent high areas (or bumps) in the composited image, while dark areas represent low areas. Choose the various options from the **Preset** drop-down list to see what they look like. Then manipulate the various parameter controls to experiment with different lighting and bump settings.

The displacement map uses the parent image as a guide to offset the pixels in the composited child track along the horizontal and vertical axes. Choose various options from the **Preset** drop-down to get a feel for some of the possibilities, and then adjust the parameter controls to see how you can create different compositing effects.

The height map plug-in uses the parent image as a guide to make the pixels in the child track appear closer or farther away from the viewer. Again, choose the presets to familiarize yourself with some of the possibilities, and then manually adjust the various parameters to see what kind of interesting effects you can create.

Note that all of these parameters of each of the 2-1 composite modes are keyframeable, which opens up the possibility for you to create animated composite effects.

Copy/paste event attributes

 You can now quickly copy the attributes of any event in your project and paste them into other events. For example, say you have a video event in the timeline to which you've applied the *Sonic Foundry Add Noise* filter, and you want to give another event in your project the exact same treatment. Right-click the event to which you've already added the filter, and choose **Copy** from the menu. This places a copy of the entire event on the clipboard. Now, right-click the event into which you want to paste the event attributes from the first event, and choose **Paste Event Attributes** from the menu. This applies the noise filter *and its parameter settings* from the first event to the second.

This procedure copies many attributes from the first event and applies them to the second event including all event switches on both audio and video events, event pitch shift on audio events, and playback and undersample rates, effects and keyframes, pan/crop settings, and velocity envelopes on video events.

Pre- or Post-Pan/Crop Toggle on Video FX

Imagine the following common scenario: You add an FX (say, the *Sonic Foundry Add Noise* filter) to a video event, then use the *Video Event Pan/Crop* feature to zoom in on a portion of the video in the event. How does this zoom affect the FX (in this example, the noise specks)?

In previous versions of Vegas, the specks did not zoom. In other words, pan/crop had no effect on the FX applied to the event. Vegas 4.0 now gives you control over this behavior. To see how this works, use the *Video Event Pan/Crop* feature to zoom far into a video clip. Next, add a filter to the video event (the *Sonic Foundry Add Noise* filter demonstrates this feature quite clearly.) The *Video Event FX* window opens, and it now contains a new button: the **Pre/Post Toggle** button, shown in **Figure 1.9**.

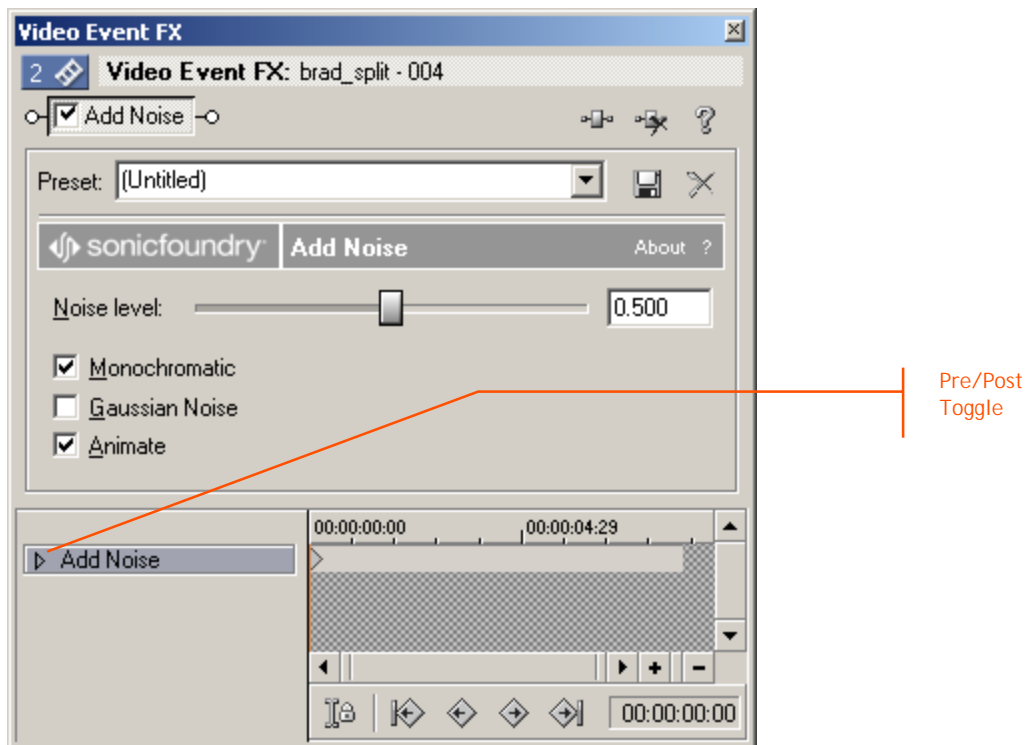


Figure 1.9


The Pre/Post Toggle button dictates whether the video filter is applied to your video before or after your Event Pan/crop settings.

By default, the **Pre/Post Toggle** button is in post mode, which means that the effect is applied to the video after (post) the pan/crop zoom. This results in the filter (the noise specks in our example) not being affected by the zoom created with the pan/crop because the zoom happens before the specks are added. This mode emulates earlier versions of Vegas. Click the **Pre/Post Toggle** button to put the filter into pre mode, and note what happens to the noise specks. The specks now grow larger because they are applied to the video before (pre) the pan/crop zoom. Since the filter is applied before the pan/crop zoom, the specks (in essence) become a component of the video, and are affected by the pan/crop zoom just the same as any other component of the video.


Due to their nature, this feature has little visible effect on the results of some video filters (color correction filters are a good example). But with many other filters, this feature gives you even more control over the look of your video project and adds a new dimension of power to your video effects.

II: Audio

5.1 surround mixing tools

 You can now create 5.1 surround mixes in Vegas, which enables you to bring a completely new dimension to your musical projects. Naturally, to take advantage of the 5.1 surround mixing capabilities, you'll need a 5.1 surround sound system on your computer. There are three ways to configure your hardware. First, you can use any sound card that has at least three stereo outputs. Second, you can use three separate sound cards, each of which has one stereo output. And finally, you can use a 5.1-compatible sound card. Connect these outputs to six powered speakers or to a 6-channel amplifier/mixer that is connected to six passive speakers.

Once you've set your hardware up so that you can monitor 5.1 surround, Vegas makes creating a surround mix easy. Open a project that you want to mix in surround sound. Note that the *Master* bus in the *Mixer* is the standard stereo bus.

Choose **File | Properties** and click the **Audio** tab in the *Project Properties* dialog. Alternatively, click the **Project Audio Properties** button  in the *Mixer* window to go directly to the *Audio* tab of the *Project Properties* dialog, shown in **Figure 2.1**. Choose **5.1 Surround** from the **Master bus mode** drop-down list. You can adjust the frequency above which no signal will be sent to the Low Frequency Effects channel (LFE). To do so, choose the desired value from the **Cutoff frequency for low-pass filter (Hz)** drop-down list. For example, a setting of *120* indicates that no audio with a frequency above 120 Hz will be sent to the LFE. This ensures that the LFE receives only very deep bass frequencies. Click **OK** to accept the changes and dismiss the *Project Properties* dialog.

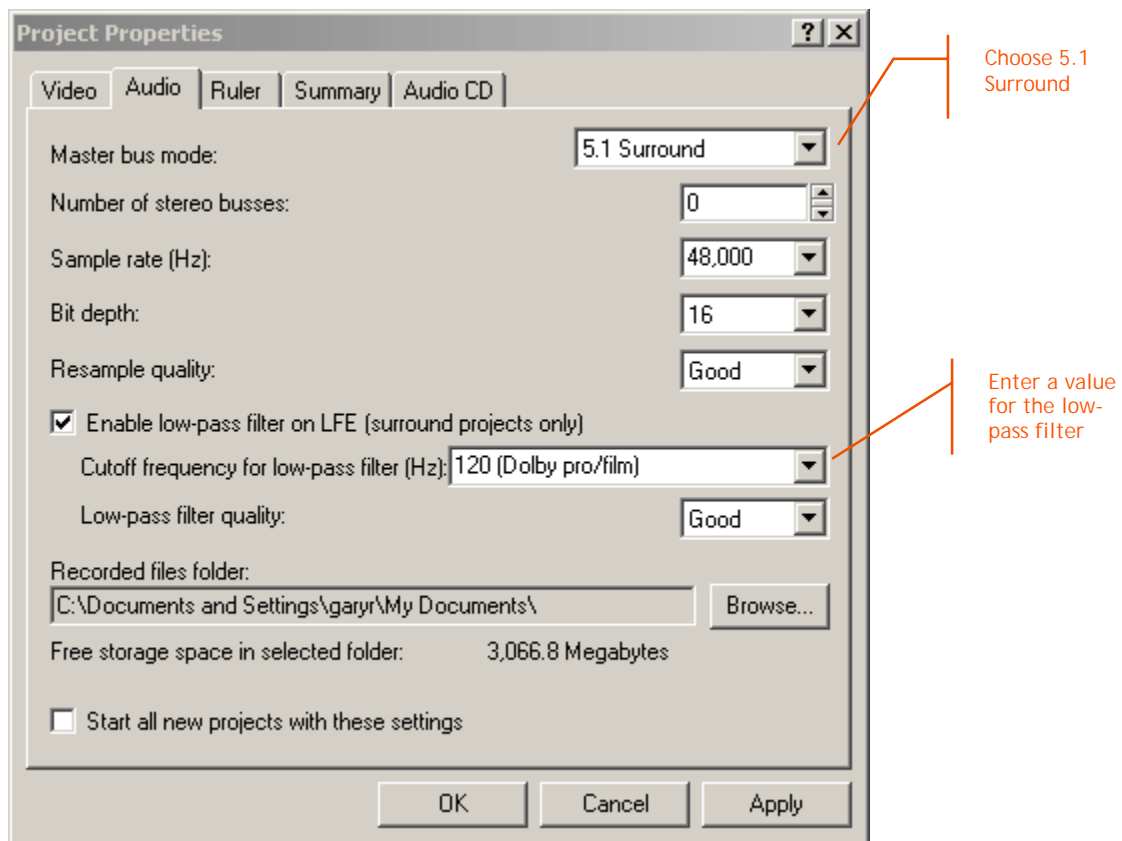


Figure 2.1
Set your project to 5.1 surround in the Project Properties dialog.

Notice the change in the *Master* bus (you may need to expand your *Mixer* window to see the entire *Surround Master* bus). The *Master* now contains four controls as shown in **Figure 2.2**: A stereo control that allows you to monitor and adjust the volume level of the Front (left and right) speakers, a stereo control for the Rear (left and right) speakers, and one mono control each for the Center and LFE channels. Use these controls to adjust the volume of the surround mix once you've assigned tracks to them.

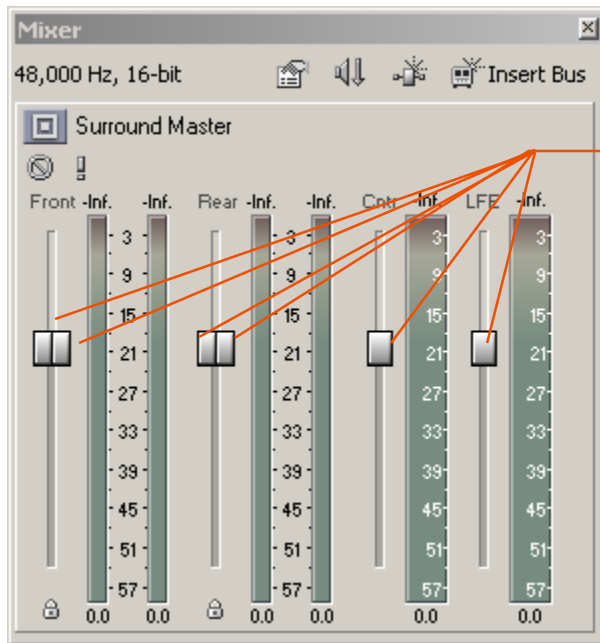


Figure 2.2

The Mixer window as it appears in a 5.1 surround project.

Next, adjust your project routing so that you can send the appropriate signal to each speaker. Choose **Options | Preferences** to open the *Preferences* dialog, and click the **Audio Device** tab. From the **Audio device type** drop-down list, choose *Windows Classic Wave Driver*. (Some sound cards require that you choose something other than *Windows Classic Wave Driver*. In these cases, the appropriate choice will appear in the **Audio device type** drop-down. Consult your sound card manual for more information.) **Figure 2.3** shows the preference dialog box.

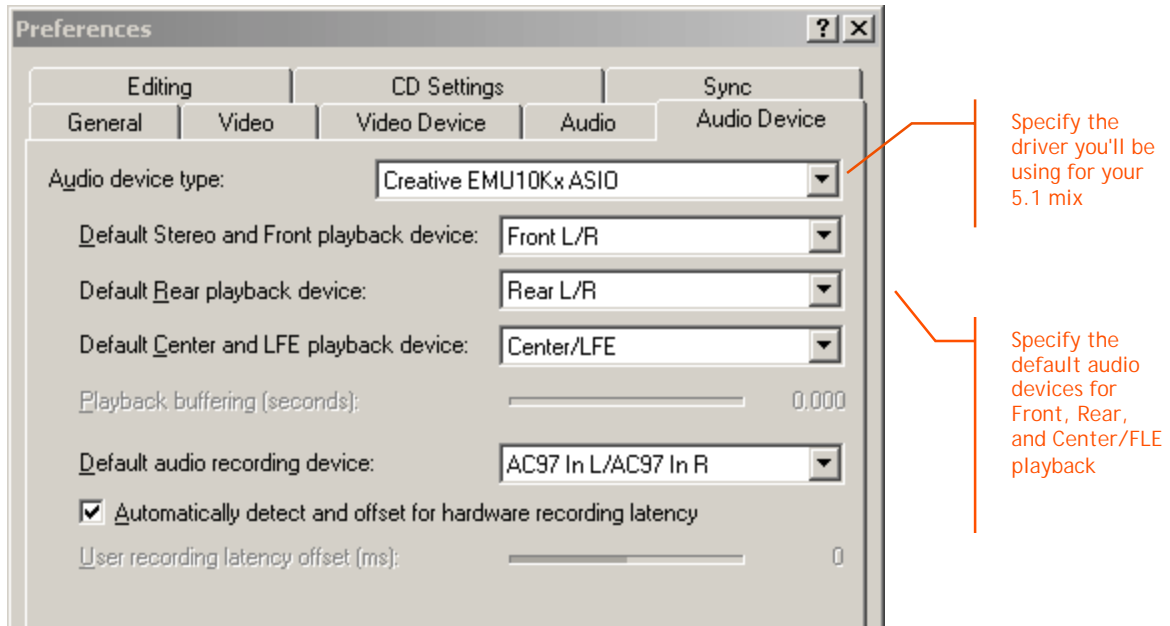


Figure 2.3
The Audio Device tab of the Preference dialog.

Click **OK** to dismiss the **Preferences** dialog.

Click the **Device Selection** button, which now appears at the top of the surround bus in the *Mixer*; choose the target channel pair from the menu, and from the submenu choose the soundcard outputs that you want to assign to those channels. (If you are unable to make these selections, it may be that your audio card requires you to change the sampling rate of your project. Please check your card's documentation for proper settings.) Repeat this process until you have assigned all of the surround channels to the appropriate output. Note that the left channel of the Center/LFE pair is the center channel, and the right channel is the LFE channel.

Notice that the track header for each track in your project contains a *Surround Pan* control as shown in **Figure 2.4**. If you assign a track to an alternate bus (one other than the *Master*), the *Surround Pan* control does not show up on the track. Instead, the bus contains the control. This enables you to pan several tracks to the same location with one panning adjustment (in the bus).

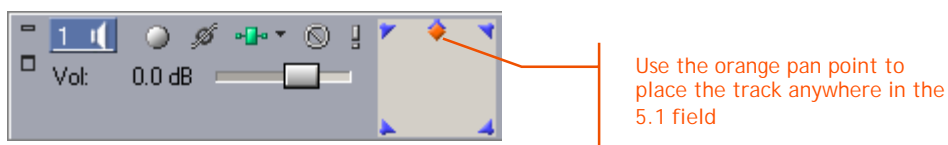


Figure 2.4
Each track header has its own 5.1 panning control area.

Use this control to place the audio from the track anywhere within the 5.1 spectrum. Alternately, route the track to an additional bus in the *Mixer*, and use the pan controls in the Bus track to define the pan location of the entire bus, and thus any track routed to it. Here we'll discuss the more direct method of panning an individual track.

Play your project in Loop Playback mode. As the project plays, drag the pan point in the pan control of the track you want to work with to place the sound anywhere in the sound field. Double-click a blank area of the pan control to open the *Surround Panner* window—**Figure 2.5** shows this larger version of the track's pan control.

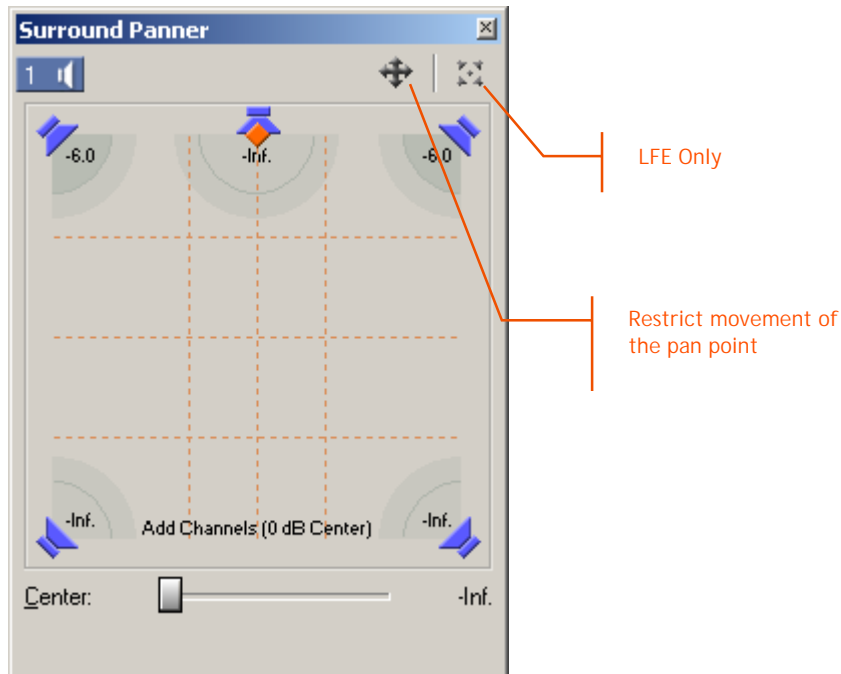




Figure 2.5
Double-click a track's pan control to access the larger Surround Panner.

Place the pan point directly on the upper-left speaker icon. This places the sound 100% in the front-left speaker. Drag the pan point to the lower-right speaker icon, and listen as the sound now comes from the rear-right speaker.

Use the **Center** fader to adjust the scale of movement away from the center channel. For example, with the **Center** fader set to 0.0 dB, note the location of the first horizontal guide line (which represents a 6 dB drop in the signal sent to each front speaker, including the center channel). Set the **Center** fader to 12.0 dB, and note the new location of the -6 dB guide. Click the Center channel speaker icon to disable the center channel (that is, prevent any signal from being routed to the center channel). In the same way, click any of the other speaker icons to enable/disable those channels.

To send the signal from this track completely to the LFE channel, click the **LFE Only**  button. The **Move Freely**  —**Move left/right only**—**Move front/rear only** button enables you to restrict the placement of the pan point to right and left or up and down movements only.

To automate your panning for a track, right-click the track icon and choose **Insert/Remove Envelopes | Surround Pan Keyframes**. A keyframe control area appears at the bottom of the track. The control contains one keyframe by default. A keyframe defines the state of the pan settings at a particular moment in time. Click the existing keyframe and set the panning as desired. Next, click at another point later in the timeline to place the project cursor there. Now reposition the pan point. This adds a new keyframe to the control. In the *Surround Panner* window, a dotted line indicates the transition from the first keyframe to the second. Add as many keyframes to the controller as you need in order to move the sound around the surround field the way you want. Right-click a keyframe to choose the type of transition you want from that keyframe to the next. **Figure 2.6** shows an example of an automated pan control.

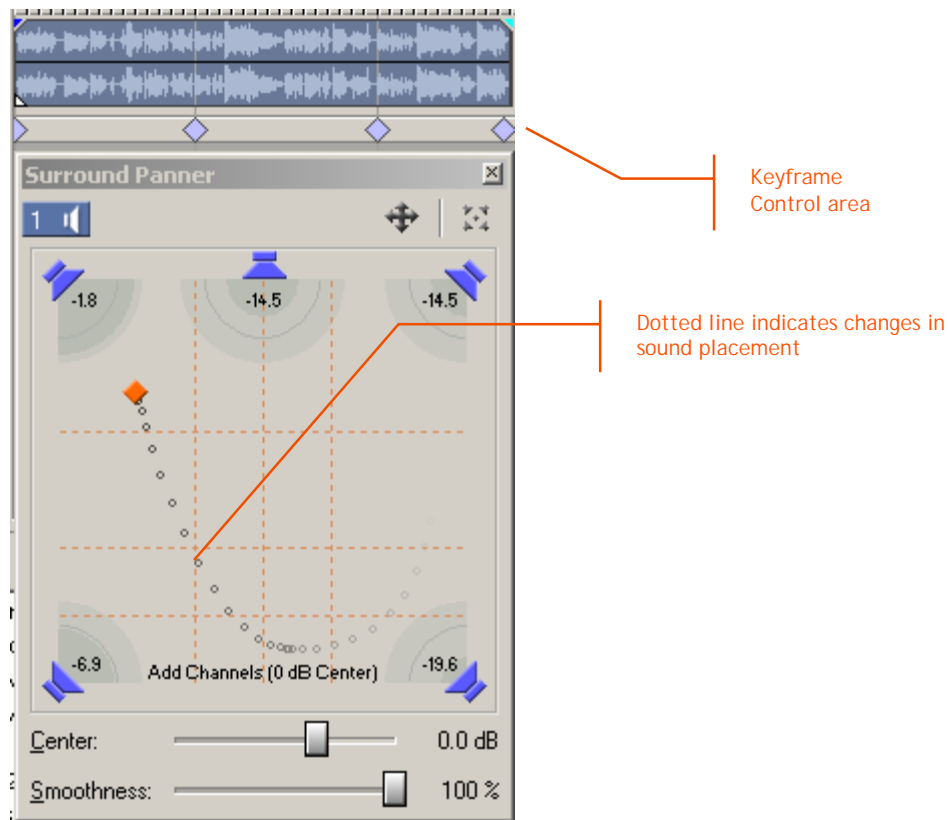


Figure 2.6


The Surround Panner window shows the movement of the sound through the 5.1 field.



DirectX® plug-in effects automation

Effects automation allows you to change the parameters of automation-enabled DirectX plug-in FX over the course of a project, thus creating an automated mix. It's like having a studio assistant who adjusts the parameters of the effects in exactly the same way at exactly the same moment every time you play or render your project. This makes it possible to fix problem areas, create interesting special effects, and achieve other creative goals.

As an example, imagine that a short portion of one of your audio tracks contains very harsh high end that's not present in the rest of the recording. In previous versions of Vegas, you could use the Track EQ plug-in to define an EQ setting for that entire track. You could set the EQ to bring down the high end and thus correct the problem area. But this approach might very well make the non-problem areas of the track sound dull and lifeless. You really need one EQ setting for the majority of the track, and a different setting for the problem area. In other words, you need to change the parameters of the EQ over time. Effects automation makes this possible—and easy—to accomplish.

By default, each new track in your project contains a Track FX chain with the automated *Track EQ* plug-in already added. Notice the drop-down arrow next to the **Track FX**  in the track header. This arrow indicates that at least one automated FX plug-in exists in the Track FX chain (the default track FX all support automation, so this arrow will usually appear). Click the **Track FX** button to open the *Audio Plug-In* window. Everything in this window looks and works the same as in Vegas 3.0, with the exception of two new buttons shown in **Figure 2.7: FX Automation** (which enables you to choose the parameters to automate) and **Bypass FX Automation** (which enables you to toggle automation off and on so that you can do an “A/B” comparison).

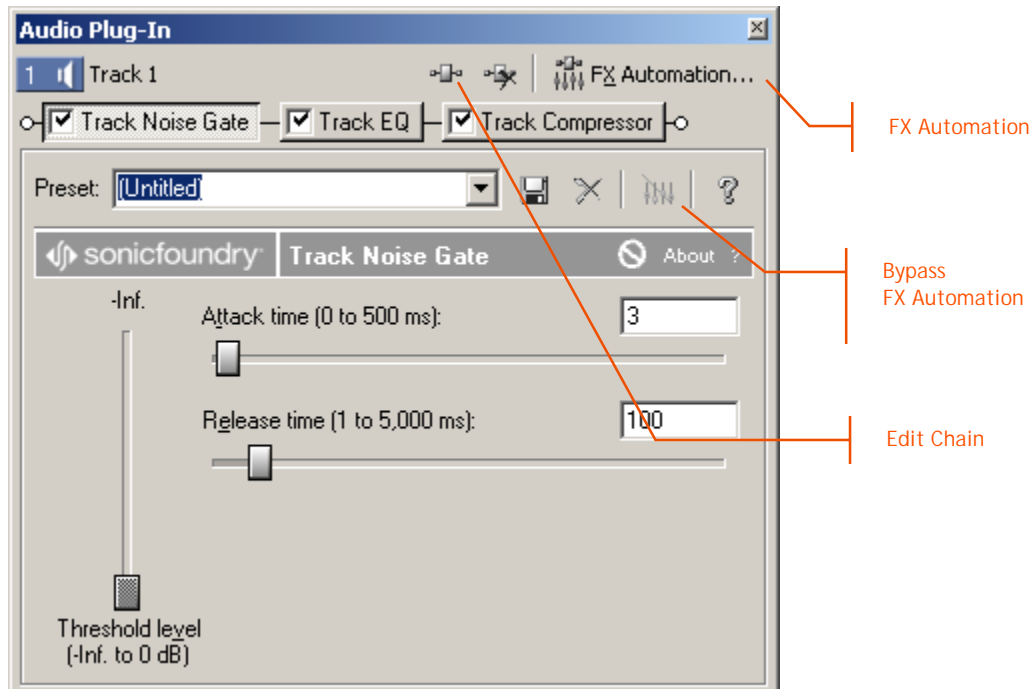



Figure 2.7
The Audio Plug-In window now gives you access to audio FX automation.

Before you click the **FX Automation** button, click the **Edit Chain**  button to open the *Plug-In Chooser* window shown in **Figure 2.8**. In the tree view of the chooser, expand the *Audio* folder, then click on the *Automatable* folder to display its contents in the list view. The list view now shows all of the Sonic Foundry automatable plug-ins available on your computer. Third-party automatable plug-ins don't appear in the list until you use them in your project. Notice that the modified FX icon identifies these plug-ins as automatable. Click **Cancel** to close the *Plug-in Chooser* window without making any changes to the chain.

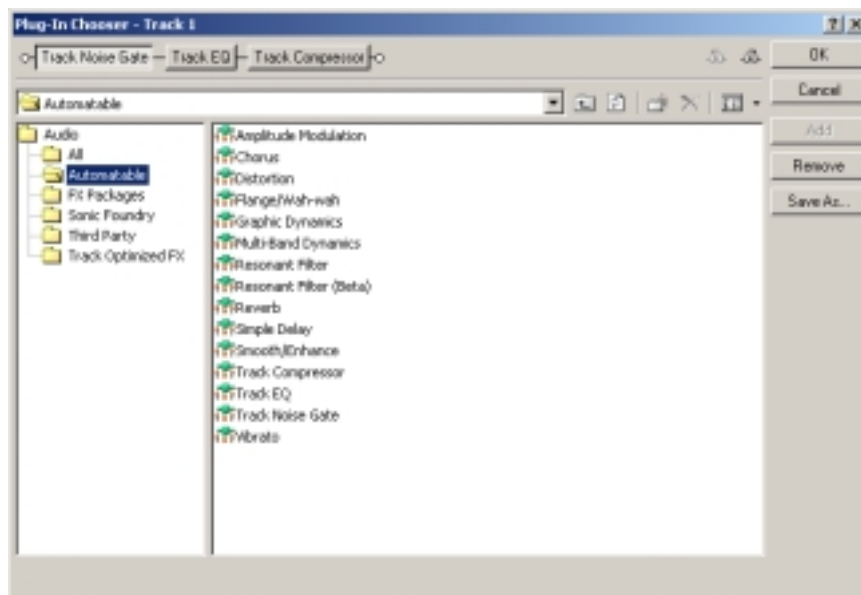


Figure 2.8
Choose the Automatable folder to show just the automatable plug-ins installed on your system.

Back in the *Audio Plug-In* window (**Figure 2.8**), click the **Track EQ** button to make the Track EQ parameter controls visible. Notice that in its default state, all of the control circles have a gain of 0.0 dB, indicating that the plug-in does not currently affect the audio on this track. We'll automate the gain on two frequencies to demonstrate automation.

Click the **FX Automation** button to open the *FX Automation Chooser* window shown in **Figure 2.9**. Here you can choose each parameter you want to automate. Click **Band1 Gain** and **Band3 Gain** check boxes to activate them.

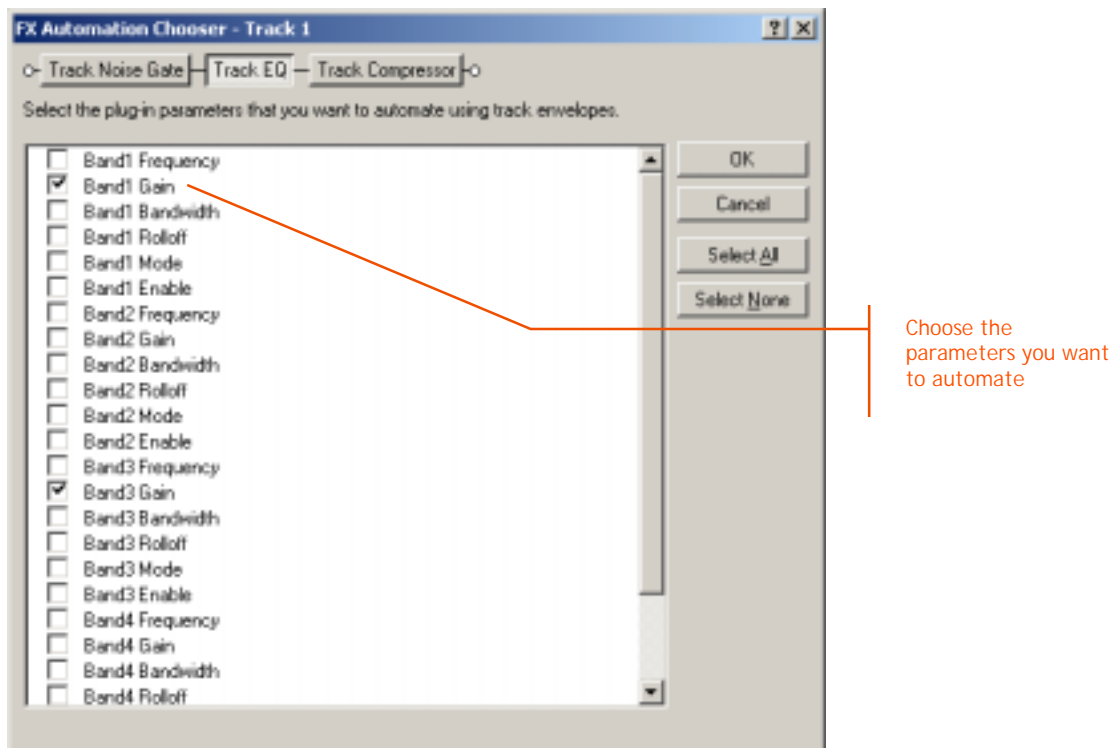


Figure 2.9
Choose the FX you want to automate in the FX Automation Chooser window.

Click **OK** and notice that an envelope now runs through your track. (If the *Audio Plug-In* window obscures the track, move it out of the way, but don't close it.) In reality, there are two envelopes present, but one lies directly on top of the other. In order to ensure that you're working on the correct envelope, click the small arrow to the right of the **Track FX** button, and choose *Track EQ: Band1 Gain* from the menu as shown in **Figure 2.10**. You now see only the envelope for Track1 Gain.

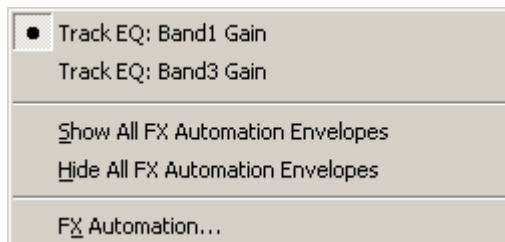



Figure 2.10
Show and hide the various automation envelopes on your track.

FX Automation envelopes work just the same as other envelopes such as volume and pan that you've used in previous versions of Vegas. Right-click the envelope and choose *Add Point* from the shortcut menu. Add several other points to the envelope. Drag the envelope points to new positions to create custom automation for the *Track EQ: Band 1 Gain* envelope. Next, place the cursor at the desired location in the timeline. You can see (in the *Audio Plug-In* window) the parameter settings for the plug-in at the location. Make adjustments to the automated parameter. Vegas adds a new point to the envelope at the cursor position, and positions the point according to the adjustments you make to the parameter. (This optional feature works with all Sonic Foundry automatable plug-ins, but not all third-party plug-ins support it.)


Click on the arrow next to the **Track FX** button again, and choose *Track EQ: Band3 Gain* from the menu. Add points to this envelope just as you did to the first envelope and reposition them. Click the arrow next to the **Track FX** button once again, and choose *Show all FX Automation Envelopes* from the menu so that you can see both envelopes simultaneously as shown in **Figure 2.11**.





Figure 2.11
Automation envelopes applied to Track 1.

Now for the payoff! Click the **Play From Start** button  and listen to how the automation envelopes you added have changed the character of the audio in this track. For fun, watch the *Audio Plug-In* window where you see the EQ controllers reacting in real time to the automation you've created.


ASIO driver support

 ASIO drivers offer a low-latency driver model that can make working with audio on your computer more efficient. Vegas now supports ASIO drivers. To use ASIO drivers in Vegas, install the driver for your sound card on your computer (not all sound cards have ASIO drivers). Then, choose **Options | Preferences** to open the *Preferences* dialog. Click the **Audio Device** tab, and choose the ASIO driver from the **Audio device type** drop-down list. ASIO drivers open up a number of possibilities including support for many surround-sound sound cards and record input monitoring.

Record input monitoring

 You can now monitor your recording input through Vegas while you are recording. To monitor your recording input, arm the track for recording, and then click the **Record Device Selector**  button on your track header. If it's not already selected, choose **Input Monitor** from the menu. Now when you send signal to the armed track, you can hear that signal through Vegas.

You can also add effects to the input signal during recording. For example, you can add a reverb to your vocal as you record it. You can monitor the input signal (your voice) along with the reverb. Hearing the effects while you record often has a positive effect on your performance.

When you click the **Record**  button, the input signal is recorded to the track, but the FX chain is not. In other words, even though you hear the effects through the *Input Monitor* feature, the recording signal is recorded to the armed track dry (without the effects).

If you want to record the wet (with effects) signal that you hear through the *Input Monitor*, route the track to an additional bus in the *Vegas Mixer*, and then route that bus to a channel on your

outboard mixer. Route the signal from the outboard mixer back through a second input on your soundcard to another Vegas track that you have armed for recording and set to receive signal from the selected input on your soundcard. (This assumes that you have a soundcard with multiple inputs and outputs.)

Input monitoring success depends upon the performance of your computer. Latency can be a real problem, and you'll most likely have to use ASIO drivers or some other low-latency drivers to successfully monitor your recording input.

To turn input monitoring off for every new audio track you create, turn it off on an existing track, right-click that track's track icon, and choose **Set Default track Properties** from the shortcut menu. In the *Set Default Track Properties* dialog, select the **Input Monitoring** check box to indicate that you want the state of the input monitoring for this track to become your default state, and click **OK**. Now when you add a new audio track—whether in the same project or a new one—Vegas disables the input monitoring feature for that track.



Master, auxiliary, and effects bus tracks

Any bus control that you can add to the Vegas mixer can now be automated with envelopes using bus tracks. As you saw earlier, every project has two bus tracks by default: the video bus track and the master bus track. You already worked with the video bus track earlier, so here we'll talk about the Master and other audio bus tracks.

To view your project's bus tracks, choose **View | Audio Bus Tracks**. The default bus tracks appear in a separate section at the bottom of the timeline, along with tracks for any other busses you may have added to your project. This section of the timeline has its own scrolling controls so that you can scroll to see other bus tracks if you have more than one. Drag the horizontal bar that separates bus tracks from regular tracks to resize the bus track area so that you can see more than one bus track at once.

Notice that Bus Track headers contain many of the same controls as regular Track headers, as well as some of the controls available in the buses themselves. For instance, click the **Minimize Track Height** button to make the track as short as possible (allowing you to see more bus tracks at once). To solo a bus, click the **Solo** button at the top of the bus in the **Mixer**, or click the **Solo** button in the Track header for that bus track. Similarly, you now have more than one way to mute a bus, reroute it, and add FX to it.

As an example of using bus tracks, let's create a fade-out ending for a multitrack project. In previous versions of Vegas, you had to fade-out each track individually. This became cumbersome when there were many tracks in the project. To accomplish the task using the new bus tracks, right-click a blank spot within the master bus track header and choose **Insert/Remove Envelope | Volume** from the shortcut menu. A volume envelope appears in the timeline of the master bus track.

This volume envelope works exactly the same as the volume envelopes in individual tracks. Right-click the envelope where you want your fade-out to begin and choose *Add Point* from the menu. Add another point on the envelope at the very end of your project. Drag the point at the end of your project all the way to the bottom of the master bus track (-Inf dB), and you've successfully created your fade-out ending as shown in **Figure 2.12**. Play your project to verify that you have the fade-out that you want.

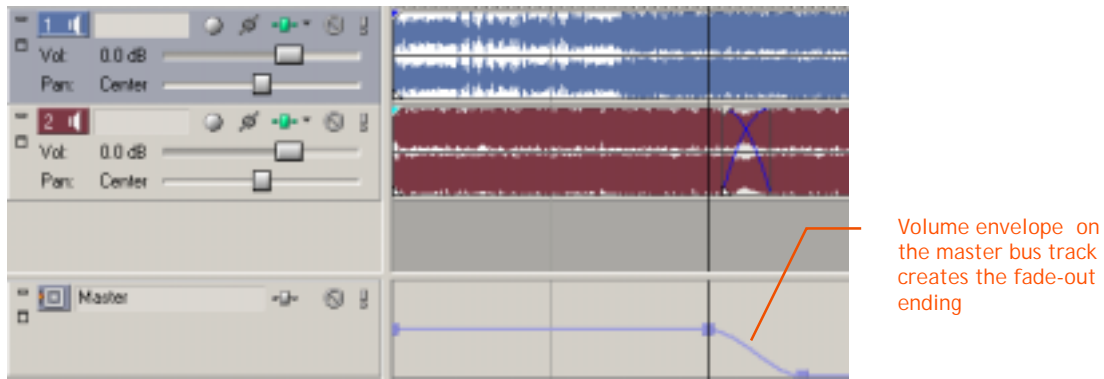


Figure 2.12

Use the master bus track to create a fade-out ending for a multi-track project.

Similarly, you can add volume and pan envelopes to all of the auxiliary buses and assignable effects busses in your project. In addition, you can add effects automation to any of your bus tracks if the effects chains on those busses contain automatable effects.



Enhanced audio timestretching

Vegas enables you to time stretch and pitch shift audio events with minimal echo or artifacts. Vegas 4.0 improves the playback of time stretched events with less stuttering, providing increased precision for projects requiring critical timing adjustments. To time stretch an audio event, right-click the event and choose **Properties** from the shortcut menu. Choose the time stretch method from the **Method** drop-down list, and then set the parameters as desired. As a shortcut method, hold the **Ctrl** key and drag the edge of the event (left for time compression, right for time expansion).



Improved effects bypass

Sometimes it's helpful to bypass all of your audio effects so that you can make A/B comparisons between your project with and without effects. You can easily bypass all of your project's audio effects. Choose **Options | Bypass All Audio FX**. Notice that the icons for any populated effects chain (any chain which contains at least one effect) all have a red line through them now. This indicates that one or more effect is present in the chain, but that bypass mode is active so you won't hear the effects. Play your project, and notice that you don't hear any FX. Choose **Options | Bypass All Audio FX** again, and listen to how the effects change the sound of your project.

III: Editing Techniques



Enhanced ripple editing model

The ripple editing function (a part of Vegas since the early versions) has been revamped to make it easier to use, more powerful, and more useful than ever before. The new ripple edit model is a post-edit ripple, and you can choose to apply these ripples manually or have Vegas apply the ripples automatically as soon as you make an edit. The idea of a ripple edit is that when you make an edit, Vegas notes not only how the edited event is affected, but also how the project time is affected, and adjusts the project accordingly. For instance, when you move an event so that it occurs later in the timeline in ripple edit mode, Vegas moves every event that occurs after the moved event so that they maintain their relationship to the moved event.

The concept is easy to understand once you see it in action. To see how ripple editing works, let's set up a simple project with six events. Arrange events 1, 2, and 3 on the same track. Put events four and five on a new track, and make sure that they start later in the timeline than event 1. Put event six on another new track, and make sure that it also starts later in the timeline than event 1, but also make sure that it starts before event 2. Finally, add a marker to the project at a point close to the middle of event 3. Your project should look like the one in **Figure 3.1**. Now you're ready to experiment with ripple editing.

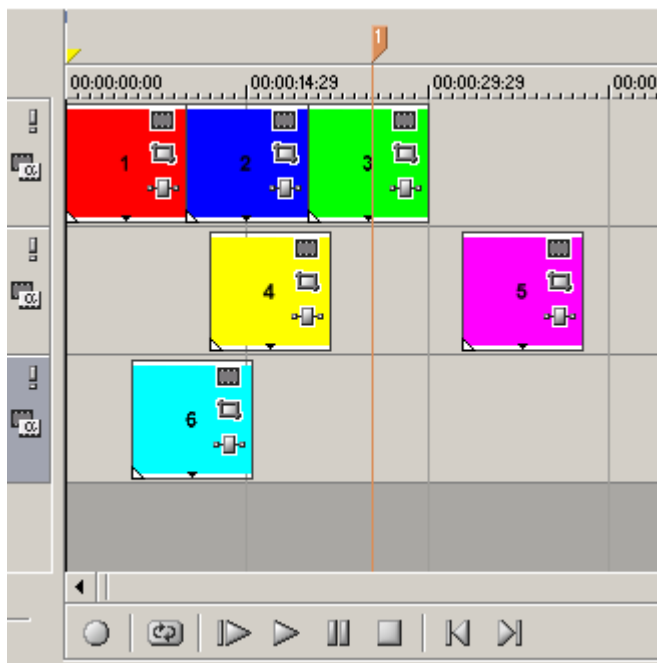


Figure 3.1

Set your project up like this one to experiment with post-edit ripples.

Drag event 1, and drop it later in the timeline (after event 3 to make the results easier to see.) Notice the blue ripple arrow at the top of the timeline, as shown in **Figure 3.2**. The arrow starts at the point in the timeline at which event 1 originally started, and ends at the point in the timeline that the event now starts. This represents the amount of time that the other events will ripple.

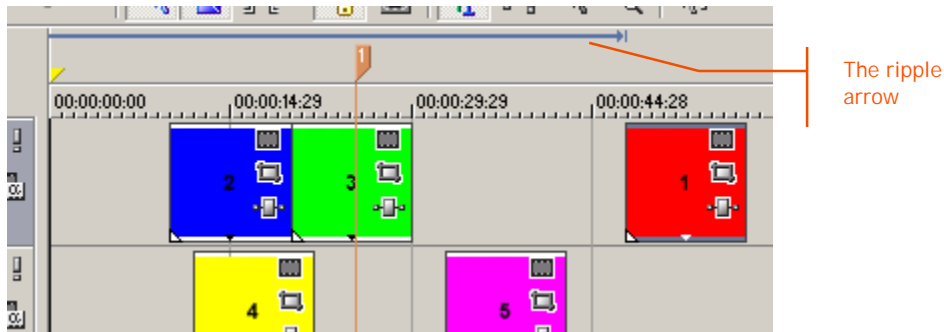


Figure 3.2
The ripple arrow shows the distance Event 1 was moved and indicates the amount the other events will be rippled.

By default, Vegas is in manual mode for post-edit ripples, so choose **Edit | Post-Edit Ripple | Affected Tracks** to force the post-edit ripple. Events 2 and 3 move, or "ripple," to the right by the length of the ripple arrow so that they maintain their original relationship to the moved event as shown in **figure 3.3**. Events 4, 5, and 6 do not move, nor does the project marker. When you choose **Affected Tracks**, only events that are on the same track as the edited event are rippled.

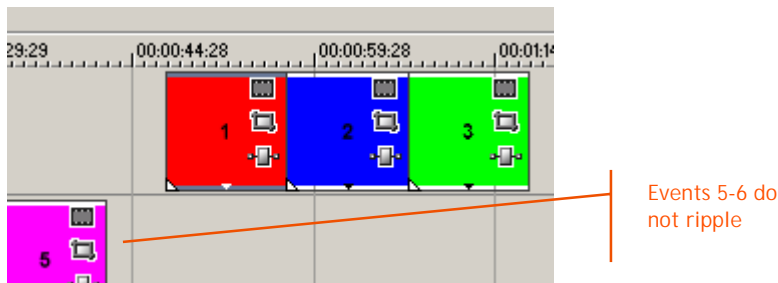


Figure 3.3
Events 2 and 3 have rippled by a distance equal to the length of the ripple arrow to maintain their original relationship to Event 1. No other events are affected.

Drag event 1 back to its original position, and choose **Edit | Post-Edit Ripple | Affected Tracks**. Events 2 and 3 ripple to close the gap left when you moved event 1. This shows that ripple edits work in both directions.


Next, click event 1 to select it, hold the **Ctrl** key and click event 4 to add it to the selection. Drag event 1 to the right again and drop it after event 3. Notice that event 4 also moves since you selected it along with event 1. Choose **Edit | Post-Edit Ripple | Affected Tracks**, and notice that this time not only do events 2 and 3 ripple, but so does event 5. Since moving event 1 also moved event 4, you had two affected tracks in your project, so the ripple edit was applied to both. However, note that the ripple did not affect event 6 or the marker.

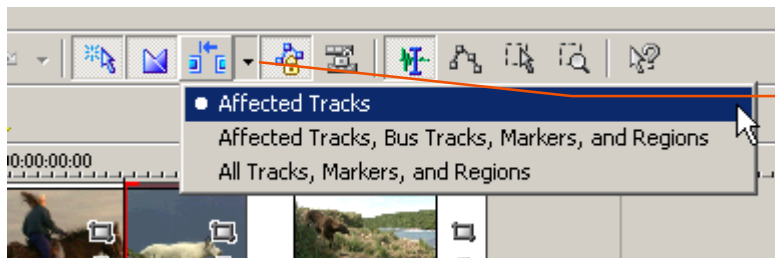
Click the **Undo** button twice: once to undo the post-edit ripple, and again to undo the event move. Click event 1 to select it, and press the **Cut** key on your keyboard. (This places a copy of event 1 on the clipboard. We'll paste it back later.) This time, choose **Edit | Post-Edit Ripple | Affected Tracks, Bus Tracks, Markers, and Regions**. Notice that this time the marker ripples along with event 2 and 3 since they are on the affected track.

Now, trim the end of event 2 to the right so that it ends *after* event 3. Choose **Edit | Post-Edit Ripple | All Tracks, Markers, and Regions**. This time all events in the project that start later than the edited event ripple, as does the marker.

As the last manual post-edit ripple, click in track two before either of the events. Click the **Paste** button to paste event 1 back into the project on track two. Choose one of the three post-edit ripple modes to see how it affects the other events on the timeline.

To significantly improve the speed of your editing, learn the keyboard shortcuts for the three post-ripple edit modes: Press **F** for Affected Tracks, **Ctrl + F** for Affected Tracks, Bus Tracks, Markers, and Regions, and **Ctrl + Shift + F** for All Tracks, Markers, and Regions.

To make editing even faster, use automatic post-ripple edits. Click the **Auto Ripple**  button to activate automatic mode. Click the arrow next to the **Auto Ripple** button and choose the desired mode from the menu shown in **Figure 3.4**. Now make an edit. As soon as you complete the edit, your project ripples automatically according to the mode you chose.



The arrow enables you to choose the desired post-edit ripple mode

Figure 3.4

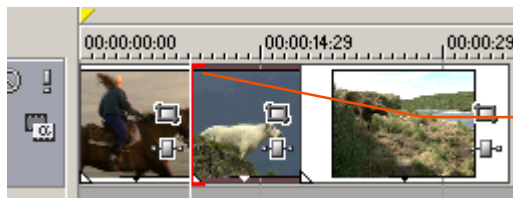
You can set automatic post-edit ripple mode to any of the three behaviors.



Keyboard trimming

Keyboard trimming provides a powerful and fast way to trim audio and video events to find the perfect in and out points. You can now quickly edit either edge of any event in your project without ever lifting your hand off of your computer keyboard. For anyone willing to learn how to edit in Vegas without constantly reaching for the mouse, keyboard trimming represents a huge leap in editing efficiency—especially when combined with the auto ripple features we just discussed. Let's first take a look at keyboard trimming in manual post-edit ripple mode to make it easier to see how it works. Then we'll switch to auto ripple mode so you can understand how the combination of these two new features make your editing significantly faster and more efficient.

To enter keyboard trimming mode, click in the track that contains the event or events that you want to edit. This selects the track. Press the **7** key on your numeric pad. This selects the first event edge to the left of the cursor. As shown in **Figure 3.5**, Vegas places a bright red bracket over the selected event edge so that you can easily identify the selected edge.



The red bracket identifies the selected edge

Figure 3.5

The left edge of the goat event is selected for trimming.

If two events touch, you can determine which event's edge is selected in two ways. First, the event itself changes colors to indicate that it is selected (exactly like it does if you click to select it), and second the red selection bracket points in the direction of the selected event. Continue to press the **7** key to choose the next event edge to the left of the currently selected edge. If the currently selected edge is the left edge of the event, Vegas jumps to the right edge of the event to the left of the currently selected event. In the same way, press the **9** key to select the next event

edge to the right of the currently selected edge (or to the right of the cursor if no edge is currently selected).

Now that you've selected the event edge that you want to edit, make sure your project is not in auto ripple mode. Press the **4** key on your numeric pad. This trims the selected edge to the left one screen pixel per each press. Depending upon your zoom ratio, one screen pixel may represent several video frames. Press the **6** key to trim the edge to the right by one screen pixel per key press. The *Video Preview* window updates as the cursor moves, so you can press and hold the keys and watch for the exact spot in the event to which you want to trim.

When you get close to the spot to which you want to trim the event, press the **1** key to trim the event to the left again. This time, however, you trim on frame at a time regardless of your zoom ratio. Press the **3** key to trim one frame to the right. The **4** and **6** keys enable you to get close to the right spot by taking larger jumps through your video (again, depending upon your zoom level), while the **1** and **3** keys let you zero in on the exact frame to which you want to edit.

When you're done trimming the current event edge, use the **7** and **9** keys to move to the next event edge that you'd like to trim. Note that while you can play your project when in edge trimming mode, the *Video Preview* window does not update. Instead, it continues to show the edge being trimmed. When you're completely done edge trimming, press the **5** key to exit edge trimming mode.

Some computer keyboards don't have a separate numeric pad (although many laptops have one built into the main keypad—press the **Fn** key to access it), but you can still take advantage of enhanced trimming if you have a mouse with a wheel on it. To select the next event edge to the left without a number pad, click on the event you want to edit, and choose **Edit | Select | Select Event Start** to select the event edge to the left of the cursor, or **Edit | Select | Select Event End** to select the event edge to the right of the cursor. Now, hold **Ctrl+Shift** and roll the mouse wheel up (away from you) to edit to the left, and down (toward you) to edit to the right by screen pixels. This action emulates pressing the **4** and **6** keys on the number keypad. Hold down **Alt+Ctrl+Shift** and roll the mouse wheel up to edit one frame at a time to the left, and down to edit one frame at a time to the right. This action emulates pressing the **1** and the **3** keys.

Now that you know how keyboard trimming works, activate *Post-Edit Ripple* mode as discussed earlier. Place two clips directly next to each other on the timeline. Use the number pad (or mouse) commands we've discussed to edge trim the right edge of the first event. Notice that the position of the second event automatically (and instantly) ripples to make room for the first event if you edit its edge to the right, or fill the space left if you edit its edge to the left. Now you can really start to see how the combination of keyboard trimming and automatic post-edit ripples can increase your editing speed dramatically. With these techniques, as fast as you can find the correct edit point, Vegas adjusts the rest of the project to maintain the relationship between the edited event and some or all (depending upon the auto-ripple mode you use) of the events that follow it in the timeline.



Cursor preview

You can now easily preview the section of your project at and around the cursor. This makes it easy to quickly see the results of an edit directly after you make that edit. This feature can be especially useful when you use it in conjunction with the new post-edit ripple model and keyboard trimming, both of which we have already discussed.

To preview a small region around the cursor area, press **0** on your numeric keypad. Vegas creates a small loop region with the cursor at its center (by default Vegas sets the loop region to 2.0 seconds.) Vegas then plays the portion of the project covered by the loop region it just created. If

you have *Loop Playback* mode activated, playback loops until you stop it, otherwise Vegas plays through the loop region just once.

To change the length of the loop region Vegas creates, choose **Options | Preferences** to open the *Preferences* dialog, and click the **Editing** tab. Enter the desired length in the **Cursor preview duration (seconds)** field. Enter any number of seconds between 0.100 and 20.000.

Event shuffling

You can use *event shuffling* to quickly rearrange the events in your project to storyboard your video, or quickly rearrange a sequence. To see how it works, arrange three clips one after the next on the same track of a new project as shown in **Figure 3.6**.

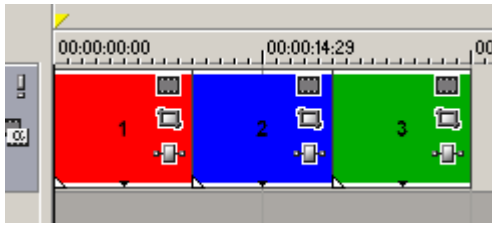


Figure 3.6
Arrange three events on the same track.

Right-click the last event (event 3) and drag it to the left. When you've moved your mouse over the top of the event 1, release the right mouse button, and choose **Shuffle Events** from the shortcut menu as in **Figure 3.7**.

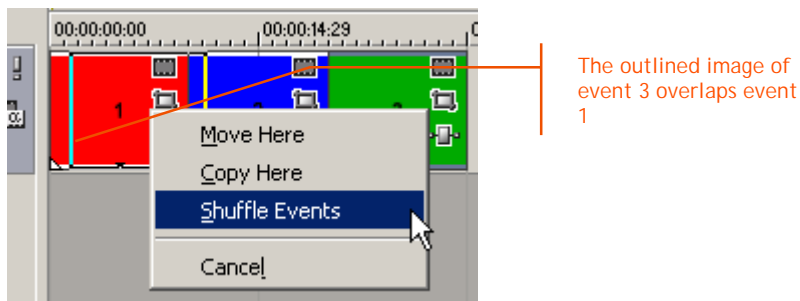


Figure 3.7
Choose Shuffle Events from the menu.

Vegas shuffles events 1 and 2 to the right as much as necessary to make room for event 3 (the one you dragged to the first position). Your events are now ordered 3, 1, 2 on the timeline as in **Figure 3.8**.

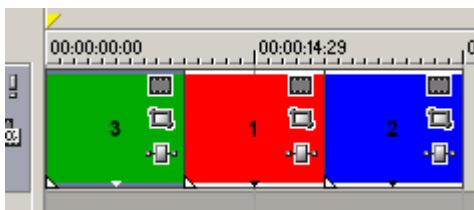



Figure 3.8
The events have been reordered allowing you to quickly storyboard your video in preparation for detailed editing. Event shuffling works for audio events as well.

Now, right-click and drag event 1 (which is now in the middle) to the right, and drop it onto event 2 (at the far right). Choose **Shuffle Events** from the shortcut menu. Event 2 moves to the left to occupy the space left when you moved event 1, and Vegas drops event 1 after event 2. Your events are now ordered 3, 2, 1.



Split-screen previewing of effects and the clipboard

Split screen previewing enables you to quickly compare the before and after results of adding a filter to your video, use the color correction techniques you learned earlier to color match two separate video clips, and accurately slip-trim an event.

There are three modes to split screen previewing, two of which you toggle between with the **Split Screen View** button , and a third which you enter automatically when you slip-trim an event. Let's talk about the automatic mode first.

A *Slip-trim* edit enables you to slip the video within an event so you can make adjustments to the in and out frame of the event without making changes to the event's position. To perform a slip-trim edit, position your mouse over the event in the timeline. Hold the **Alt** key, then drag the mouse left or right. The video within the event moves along with your mouse movements. This operation automatically sets the *Video Preview* window into split-screen mode. As shown in **Figure 3.9**, the left-hand portion of the window now shows the first frame visible in the event, and the right-hand portion shows the last visible frame. Both portions of the window update as you slip-trim the event.

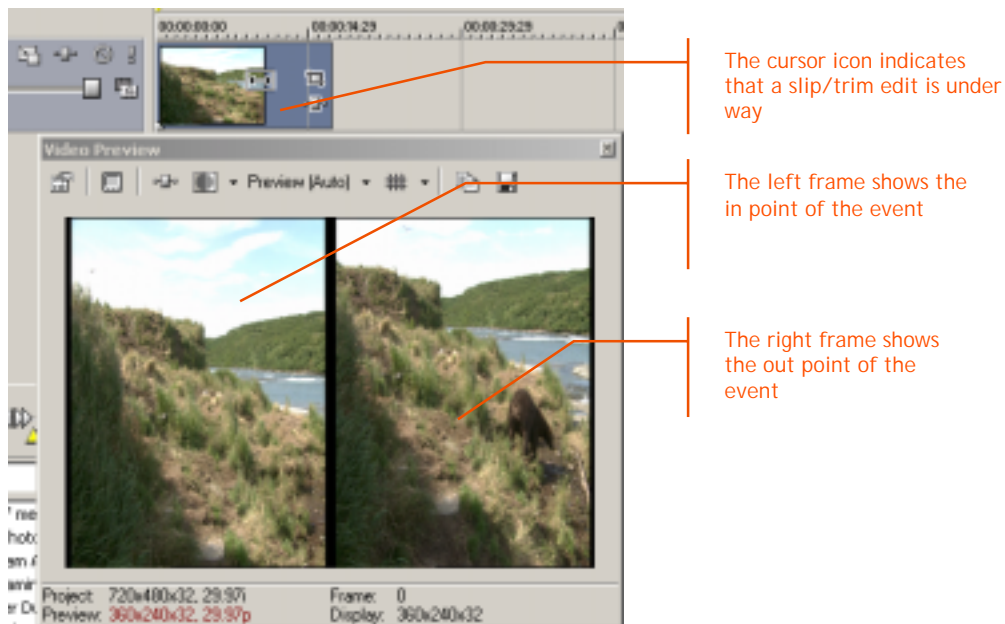


Figure 3.9

The Video Preview window shows the first and last frame of the event while you perform a slip/trim edit.

The **Split Screen View** button enables you to toggle between the remaining two split screen modes: *FX Bypassed* and *Clipboard*. Click the down arrow next to the button and choose *FX Bypassed* from the menu as shown in **Figure 3.10**.

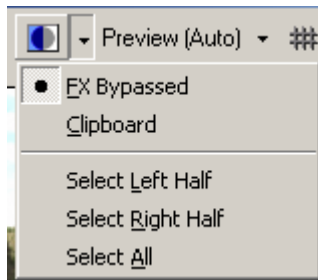


Figure 3.10

The arrow enables you to choose the split-screen mode you want to use.

In this mode, you can quickly compare the appearance of the video with and without any filters that you have added to the video. For example, add the *Sonic Foundry Add Noise* filter to an event on the timeline, and choose a setting that creates a very obvious affect on the video. Click the **Split Screen View** button to enter split screen preview mode. As shown in **Figure 3.11**, the left side of the Video Preview window shows the video as it looks without the noise filter. You can now compare that to the right side, which shows the video as it looks with the noise filter.

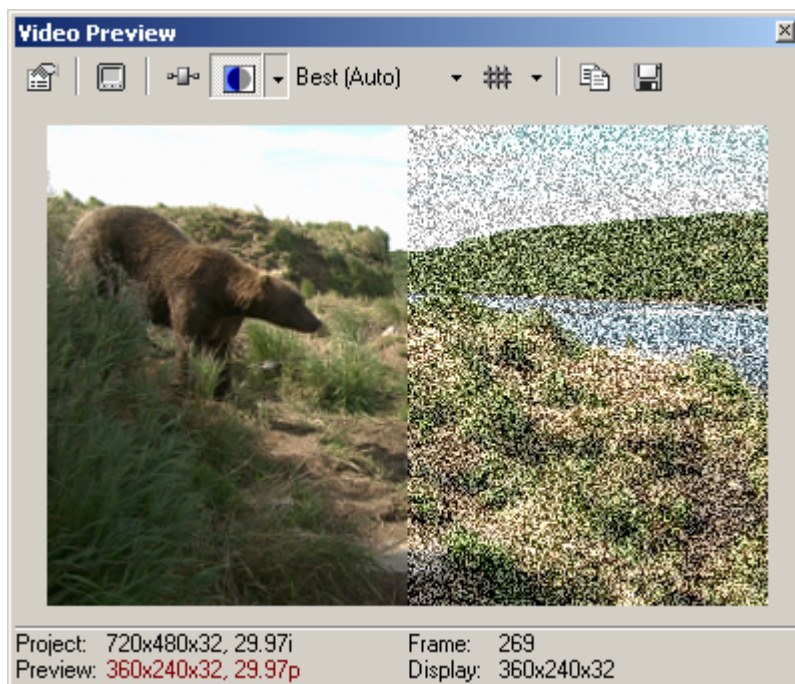



Figure 3.11

The split-screen view enables you to compare the video with and without the video filter.

As you drag your cursor into the video preview area, it changes to a crosshair. Click and drag in the *Video Preview* window to choose a different section to show the video without the filter. Double-click within the *Video Preview* window to select the entire area. You can now use the **Split Screen View** button to toggle between the processed (with noise filter) and unprocessed video.

The third split-screen mode, *Clipboard* makes the task of color matching two different video clips much easier. To use this mode, choose *Clipboard* from the **Split Screen View** drop-down menu. Position the timeline cursor over a video event in the timeline (in the case of color matching, position the cursor over the video clip to which you want to match another video clip) so that the desired frame shows in the *Video Preview* window. Click the **Copy Snapshot** button  in the

Video Preview window to copy that frame to the clipboard. Now, position the timeline cursor over the video clip to which you want to compare to the video frame you copied to the clipboard.

If you left the **Split Screen View Selection Tool** button toggled off, click it now to activate it again. Create a selection in the *Video Preview* window. The frame you previously copied to the clipboard shows up in the selection area, and you can now easily compare it to the frame currently touched by the timeline cursor. If you're color matching, you would have added a color correction filter to the event that you want to change. Make adjustments to the color correction filter, and compare the results to the frame shown in the split screen view as in **Figure 3.12**.

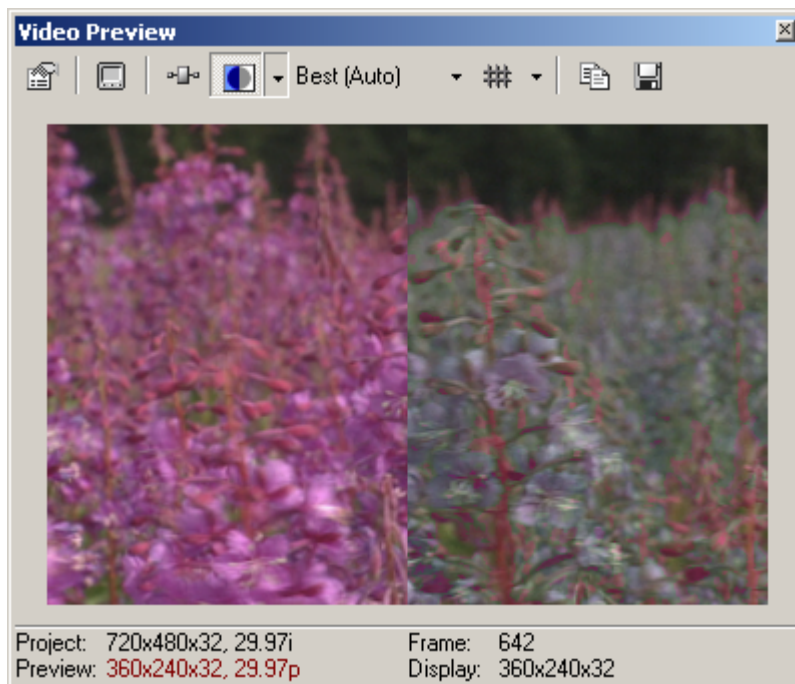



Figure 3.12

The split-screen view enables you to compare frames for color correction. The color-corrected frame on the right shows the same video clip with the purples removed.



Enhanced scrub speeds and expanded scrub ranges

The Vegas scrub tools continue to improve, and now provide even finer scrub capabilities. You can now scrub up to 20 times normal playback speed in either direction. By default, the **Scrub** control  and the **Ctrl+drag cursor** methods allow up to 20 times scrub speed for the video portion of your project. Note that the audio is muted during any scrub at speeds greater than 4 times normal in either direction.

JKL scrubbing allows up to four times normal speed in either direction by default. If you want to change the upper limit of your JKL scrubs, choose **Options | Preferences** to open the *Preferences* dialog, and click the **Editing** tab. Choose from three different settings in the **JKL/Shuttle Speed** drop-down:

- *Slow*: sets the limit to two times normal speed (this emulates Vegas 3.0 behavior).
- *Medium*: the default, this option sets the limit to four times normal speed.
- *Fast*: sets the limit to 20 times normal speed.

Media markers in events

Some of the media files you add to your Vegas projects may have markers and/or regions embedded in them. You can view these markers when you view the media in the *Trimmer*. In fact, in the *Trimmer* you can move markers, delete markers, or add new ones. Vegas 4.0 now gives you the option of viewing these media-level markers inside the events in your timeline, as shown in **Figure 3.13**. When you make changes to markers in the *Trimmer*, the event in the timeline updates to reflect these marker changes.

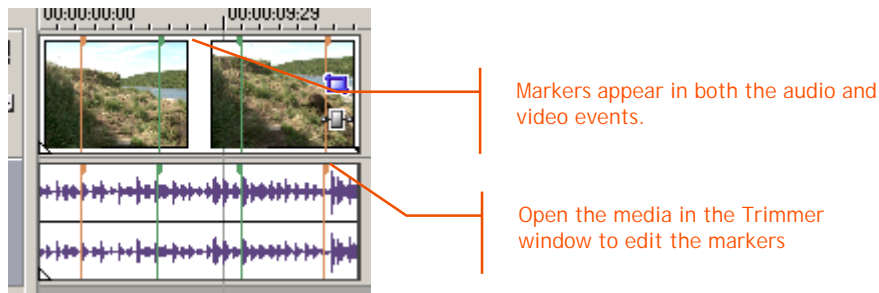


Figure 3.13

Media markers now appear in events on the timeline. They can help you to find exact edit points and have other uses.

These markers can then be useful for positioning events, edge trimming, or timing one event to another. With project snapping enabled, markers act as snap points when you edge trim the event so that as you drag the event edge close enough to a media marker, the edge snaps to the marker. The markers also act as snap points for placing your cursor within the event so that if you click close enough to a media marker, Vegas positions the cursor exactly at the marker. Note that these are the only two cases in which media markers behave as snap points. However, one trick is to reposition the event's snap offset so that it sits directly on a media marker. That marker (actually the repositioned snap offset) now acts as a snap point.

Event media markers are visible by default. If you can't see your event media markers (or if you can see them and want to hide them), choose **View | Event Media Markers**. Hidden media markers do not act as snap points regardless of whether you enable project snapping.

Selecting events from the Media Pool and clips from the timeline

You can now use the *Media Pool* to quickly select every event in your timeline that contains a specific media clip. You can “go the other way” too—that is, use the timeline to select a media clip in the *Media Pool*.

To select events on the timeline from the *Media Pool*, right-click a media clip and choose **Select Timeline Events** from the shortcut menu. This selects every event in the timeline that uses that media clip.

To select the media (in the *Media Pool*) used by an event in the timeline, right-click the event and choose **Select in Media Pool** from the shortcut menu. The *Media Pool* opens (if it's not already open) and Vegas selects the media used in the event.

IV: Media Management



Media Pool bins

With Vegas 4.0, the *Media Pool* becomes an even more powerful organizational tool. You can now organize the clips in your project using bins. Think of Vegas bins as a virtual filing system that you can use to organize and easily access your clips. They work exactly the same as the bins in the Sonic Foundry Video Capture application. In fact, you can easily move bins that you set up during video capture into your Vegas *Media Pool* so you only have to organize your captured clips once. You can also conduct targeted media searches within your *Media Pool* to find the clips you're after even more quickly.

In this section, we'll take a look at bins: what they are, how to set them up, and how to populate them. In the following two sections we'll talk about integrating your video capture bins with those in your *Media Pool*, and learn how to search your *Media Pool* for specific media clips.

To understand bins, think of them as drawers in a virtual filing cabinet. You might have one drawer in which you keep all of your video clips that contain people, another drawer for clips with animals, another for city scenes, and several others in which you store your audio files and still image files. You might have a four-drawer filing cabinet, or a 20-drawer cabinet. You might have two filing cabinets, each with four drawers. And each of those drawers might contain smaller filing cabinets which each have several drawers. The point is, you can have as many bins as you want, and you can create bins within bins (nested bins) to further organize your media clips.

But bins have advantages over physical file drawers. For one thing, they're searchable (which we'll discuss in an upcoming section). Another advantage is that you can keep the same media clip in more than one bin without making a physical copy of it. Let's explore that idea for a moment. What happens if some of your clips have both people and animals in them? Or maybe you have clips of children holding animals during a parade in downtown New York. Those clips could go into several different bins (animals, people, city scenes), so where do you put them? With a physical filing system you'd have to choose. But with bins the solution is easy: put the clips in each relevant bin. But that increases your file storage requirements, right? Wrong! You don't actually put the physical files into the bins. Rather, you put a reference to the physical file in each bin. Therefore, the same media clip can be stored in multiple bins without increasing your file storage requirements.

Let's create some bins in the *Media Pool*. Open a project, and add several clips to it. Click the *Media Pool* tab to bring it to the front of the *Window Docking Area*, as shown in **Figure 4.1**. Notice that the *Media Pool* is now divided into a *Tree View* on the left (with which you navigate your bin structure), and a *List View* on the right (which shows the content of the selected bin) much like the *Explorer* window. By default, there are two items in the *List View*: *All Media* and *Media Bins*. Click *All Media*. All of the media clips in your project now appear in the *List View* section of the *Media Pool*. This emulates the Vegas 3.0 *Media Pool*.

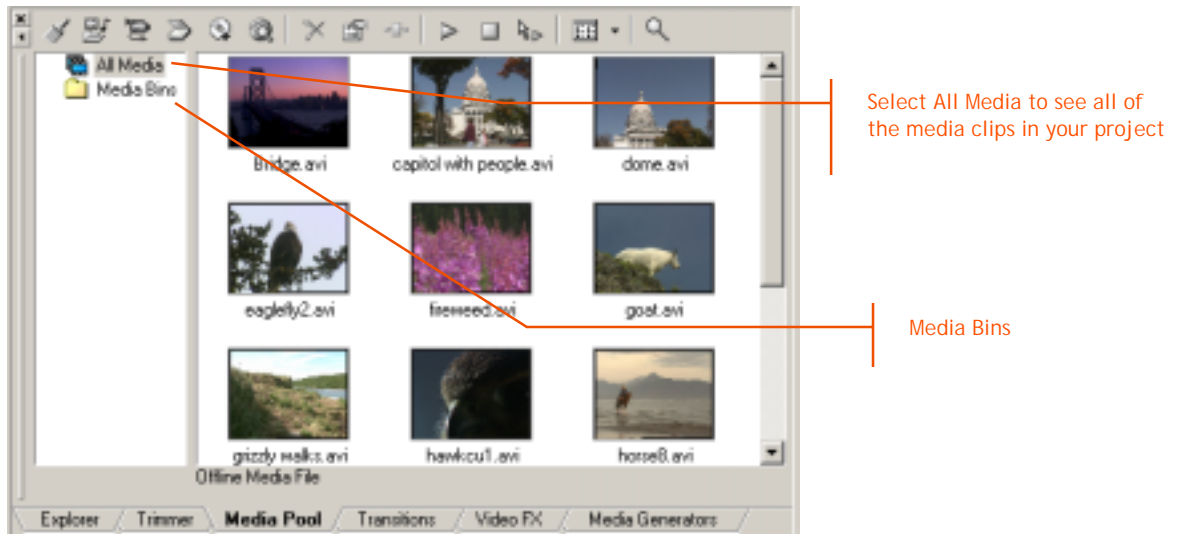


Figure 4.1

The Media Pool now allows you to easily organize and search your media.

Now, click on *Media Bins* in the *Tree View*. At first it might seem that a curious thing happens: no media clips show up in your *List View*. Why? Nothing is in the *List View* because you haven't yet created a bin structure. Let's do that now.

Right-click *Media Bins*, and choose **Create New Bin** from the shortcut menu. This adds a new bin to the *Media Bins* structure and selects the name of the new bin so that you can give it a descriptive name. Type in a name now (like *People*). You can always change the name later if you need to. In the same way, add two more bins to the structure (right-click *Media Bins*), and name them (*Animals* and *City Scenes* in our example). Now, right-click the *Animals* bin, and add two new bins called *Mammals* and *Birds*. You now have a structure like that in **Figure 4.2** where you have three empty top-level bins (*People*, *Animals*, and *City Scenes*), and one of your bins contains two empty nested bins (*Mammals* and *Birds*). Now you're ready to populate your bins and organize your media clips.

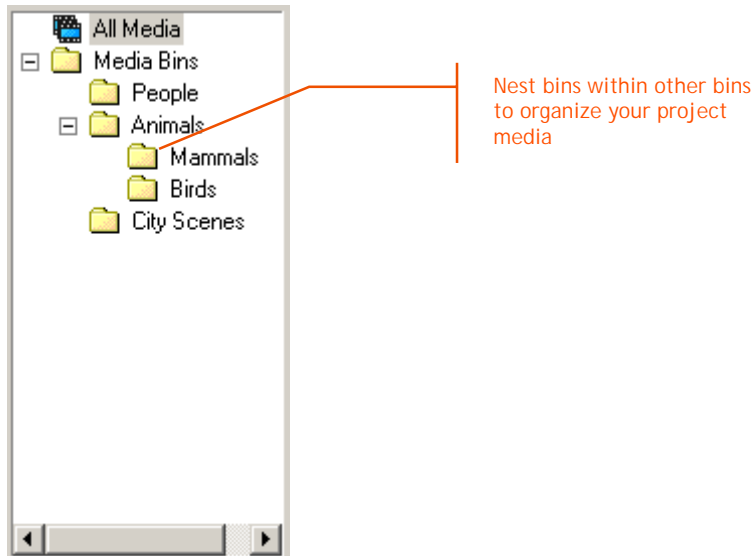


Figure 4.2

Nest bins within bins to create a bin structure and organize your project media.

Click back on *All Media* in the *Tree View* to show all of your media in the *List View*. Note that you can still see the bin structure you just created in the *Tree View*. Click and drag a clip that has a person in it from the *List View* to the *People* bin in the *Tree View* (make sure to select just the clip you want before you drop it into the bin—if multiple clips are selected, they'll all be dropped into the bin.) Note that Vegas does not remove the clip from the *List View* of the *All Media Folder*. Now click on the *People* bin, and the *List View* shows just the contents of that bin (one clip if you followed our example here.) Now populate the other bins in the same way. Put some clips into more than one bin where appropriate.

Once your bins are populated, click on the various bins to see how easily you can now find a specific type of clip. In our example, there may have only been a handful of clips, so this might seem like a lot of work for very little payback. But now imagine a big video project with scores of media clips in it. Perhaps you have projects that contain literally hundreds of clips. Now you can see how bins help organize a project of that magnitude.

You can easily reorganize your bin structure. Drag a bin into another bin to make it a nested bin, or drag a nested bin from one bin to another to change the bin under which it is nested. Or drag the nested bin to *Media Bins* to make it a top-level bin. Right-click a bin and choose the appropriate option in the menu to rename it or delete it.



Transfer bins between open copies of Vegas

Now that you've set up bins and organized your Vegas project, let's consider another scenario. Perhaps you've finished your project, and now want to start a new project. You want to pick from the same media clips while assembling this project as those you used in the previous project. Since you're drawing from all of the same media, it would be nice to take advantage of your work organizing your media during the last project.

Vegas enables you to do just that because you easily can transfer a copy of any bin from one Vegas project to another. To do this, open the original Vegas project. Then, use the desktop shortcut to launch another instance of Vegas, and in the second instance, set up your new project. Open the *Media Pool* in each project, and arrange the projects on your screen so that you can see both *Media Pools* simultaneously (it might help to first undock both *Media Pools* as in **Figure 4.3**).

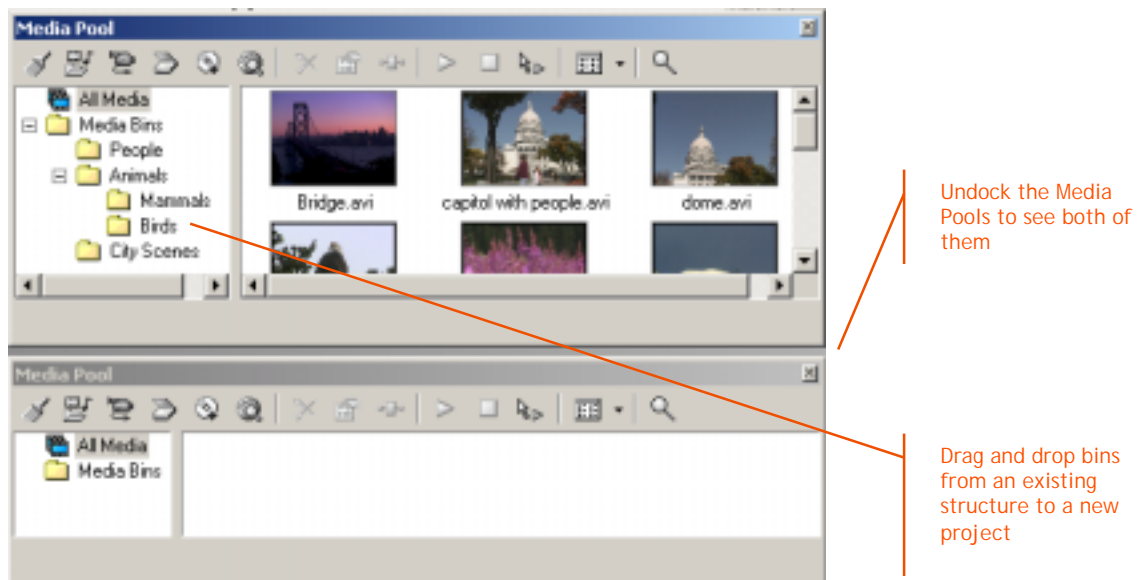


Figure 4.3

Open an existing project in another instance of Vegas and copy the bin structure from that project to a new project.

Now, drag the desired bin from the first project into the desired location in the bin structure for the new project. The bin that you drag to the new project now appears in the *Media Pool*, as do any bins that were nested in the bin you copied. For instance, if you want to copy the entire bin structure from the first project to the new project, drag the *Media Bins* folder from the first project onto the *Media Bins* folder for the new project. Vegas copies the entire bin structure from the old project to the new one.



Media Pool clip searches

You can use the *Media Pool* search function to find the clips in your project. This can be helpful if you have a large number of clips and you want to find specific ones. To search the *Media Pool*, right-click *All Media* and choose **Search Media Bins** from the shortcut menu. The *Search Media Bins* dialog shown in **Figure 4.4** opens. This dialog enables you to conduct a targeted search of your media.

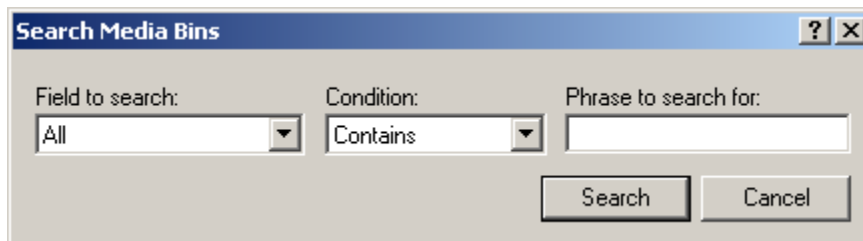


Figure 4.4

You can search your Media Pool to find just the clip you want.

From the *Field to search* drop-down list, choose from a list of fields that you can search to find the desired clip or clips. For instance, to find all of the clips in your *Media Pool* that contain the word “Zoom” in the filename, choose **Name** from the *Field to search* drop-down list.

The *Condition* drop-down list enables you to narrow your search to specific conditions. The options in this list change with the different choices you make in the *Field to search* list. Following our example, when you choose to search the *Name* field as we did earlier, the *Condition* list contains just two options: **Contains** and **Does not contain**. So, if you want to find all of the media files whose names contain the word “Zoom,” choose **Contains** from the *Condition* list.

The name of the third field in the *Search Media Bins* dialog depends upon the option you choose from the *Field to search* list. For example, choose **Channels** in the *Field to search* list, and the third field receives the name *Value to search for*. However, choose **Name** from the *Field to search* list, and the third field becomes the *Phrase to search for* field. So in our example, since we want to find all of the media files with names that contain the word “Zoom,” type “Zoom” into the *Phrase to search for* field.

Now, click the **Search** button. Vegas searches your entire *Media Pool* to find all the files that fit the criteria you specified in the *Search Media Bins* dialog. The results of the search appear in a new entry at the bottom of the *Tree View* of the *Media Pool* called *Search Results*, as shown in **Figure 4.5**. Vegas selects the *Search Results*, and you see the media clips that the search found in the *List View*. Right-click the *Search Results* entry in the *Tree View* and choose **Save as Bin**. This creates a new bin that contains the results of your search.

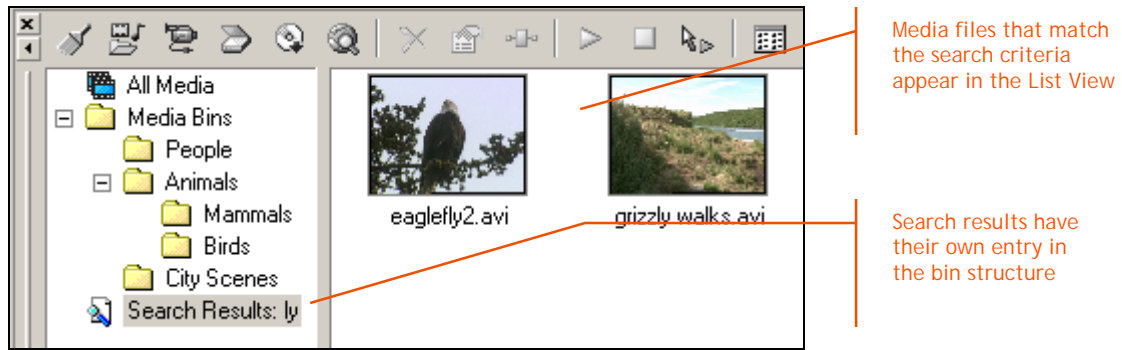


Figure 4.5

This figure shows the results of a search for media with names that contain the letter combination, "ly".

To search just the contents of a specific bin, right-click the bin and choose **Search Media Bins** from the shortcut menu. Vegas searches that bin and any bin nested within it and returns the search results as before.



Acquired media saved to active bin

You can also take advantage of the power of media bins right at the media acquisition stage. Any media you create during audio recording, video capture (using the Sonic Foundry Video Capture application), and still-image import (using the Get Photo function), gets added directly to the selected bin in the *Media Pool*. For instance, arm an audio track for recording. Click one of your bins to select it, then record some audio. The audio clip is added to the *All Media* level of the *Media Pool*, but also appears in the selected bin. This feature enables you to organize your media clips even as you create them.



Media Pool integration with video capture bins

As mentioned in the previous section, clips that you capture using Sonic Foundry Video Capture will be added to the selected bin in Vegas (as long as you select the **Add captured clips to Media Pool** check box in the *Capture Complete* dialog in the capture application.) But bin integration between Vegas and the capture application goes beyond that.

Notice that you can set up bins in the capture applications in exactly the same way as you set up your *Media Pool* bins in Vegas. This gives you the ability to organize your clips in your video capture project. Once you've done that, you don't need to repeat the work in your *Media Pool*. You can easily transfer the bin structure from your video capture project to your Vegas project. In the *Media Pool*, select the bin into which you want to insert your video capture bins. In the Sonic Foundry Video Capture application, right-click the bin you want to add to your Vegas *Media Pool*, and choose **Add to Media Pool** from the shortcut menu. The bin (and all of its nested bins) now appear in the selected bin in your *Media Pool*. To copy the entire bin structure from the video capture application to Vegas, right-click the *Clip Bins* folder and add it to the *Media Pool*.

V: Integration and application scripting



Integration with DVD Architect for DVD file preparation & authoring

Vegas 4.0 works seamlessly with Sonic Foundry's new DVD authoring application, *DVD Architect*. You can edit your movies in Vegas and render the movie out as an MPEG-2 file that is ready for import into DVD Architect. To render your project as an MPEG-2 file, choose **File | Render As**. Give the file a name and specify a save location. Choose **MainConcept MPEG-2 (*.mpg)** from the *Save as type* drop-down, and the desired template from the *Template* drop-down (make sure to use one of the DVD Architect templates to avoid recompression when you import the file into DVD Architect). If you added markers to your Vegas project, select the **Save project markers in media file** check box at the bottom of the *Render As* dialog and Vegas embeds all of your project markers in the MPEG-2 file it creates. You can now import the MPEG-2 file into DVD Architect. DVD Architect recognizes the markers you added as Chapters, and you can use those chapter markers to quickly create submenus that link directly to those chapters on your final DVD. This is a fast and efficient way to populate a scene selection menu on your DVD so that your viewers can view scenes of your movie individually if they prefer.



AC-3 encoding

If you also install the Sonic Foundry 5.1 Surround Plug-in Pack (available at www.sonicfoundry.com or with your purchase of Sonic Foundry DVD Architect), you can render your surround mix into a Dolby Digital 5.1 Surround AC-3 file, or your stereo mix to a stereo AC-3 file. With the 5.1 Surround Plug-In Pack installed on your system, choose **File | Render As**. Give the file a name and specify a save location. Choose *Sonic Foundry AC-3 (*.ac3)* from the **Save as type** drop-down list, and choose *5.1 Surround DVD* from the **Template** drop-down. Click the **Save** button to begin rendering. When rendering is complete, import this AC-3 file into your DVD Architect project and burn a DVD that contains the full 5.1 surround experience.



Application scripting: Introduction

Application scripting in Vegas 4.0 enables you to customize the application to automate specialized tasks that might otherwise require hours of time to perform manually. For example, suppose you want to render your movie in several different streaming formats, say .wma, .rm, and .mov. Further, you want to post these streaming videos to your Web site at three different bit rates each so that anyone can view your film regardless of the speed of their connection to the Internet. This scenario requires that you render your movie nine times. You could render the first one, wait until it's done, then render the second one, wait some more, then render the third one, and so on. Obviously this approach requires a lot of babysitting on your part while you prepare the next render and go through the render procedure nine different times. Application scripting makes easy work out of this scenario because it enables you to automate the process. You can also use scripts to integrate with external applications and implement customized features. All of this bolsters the power of editing in Vegas.

You can use scripting on two general levels. First, you can simply run scripts that others have written. Obviously, this limits you to accomplishing the tasks that others have deemed important. Second, you can write your own scripts. This enables you to create scripts that solve specific problems for you. You can also use a mixture of these two approaches, that is, start with a script someone else has written, and modify it to fit your needs.



Application scripting: Running a script

To run scripts in Vegas, you need to be running Windows XP or (on other Windows versions) you must first install the Microsoft *.NET Framework*. You can find more information and

download this free install at the Windows Update site (choose Windows Update from the Start menu). Now you're ready to run scripts, but you need scripts to run. Later we'll talk about writing your own, but you can also run scripts written by others. The Vegas installation disc includes some simple scripts for you to use. Navigate to the Extras folder on your Vegas application CD-ROM. You can also download scripts from the Sonic Foundry website at <http://www.sonicfoundry.com/download>. Finally, you can communicate with other Vegas users in the scripting forum at <http://www.sonicfoundry.com/forums>. Several of these users have scripts that they are willing to share with others. A word of caution: scripting is a very powerful tool. To avoid undesirable results, make sure that you completely trust the writer of the script before you run the script in Vegas.

Now that you know where to find scripts, choose **Tools | Scripting | Run Script**. In the *Run Script* dialog, navigate to the location of your script files, choose a script, and click the **Open** button. Vegas executes the script, and the results depend entirely upon what the script dictates. For example, run the *simple.js* script. This script brings up a message box on your screen that tells you which version and build of Vegas you are currently running. **Figure 5.1** shows the results of running the *simple.js* script.

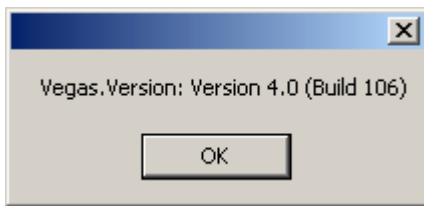


Figure 5.1
The results of running the *simpl.js* script from the Vegas installation disc.

You can customize your scripting submenu to include up to 10 scripts that you access via the **Tools** menu. To customize your scripting submenu, choose **Tools | Scripting**. The submenu lists 10 entries labeled *Set Script n* (where "n" is the number of the entry), shown in **Figure 5.2**. Choose the entry to which you want to assign a script. In the *Set Script* dialog, choose the script. Choose **Tools | Scripting** again. The name of the script that you assigned to the menu appears in place of *Set Script n*. Choose the script from the menu to run it (this bypasses the *Run Script* dialog.)

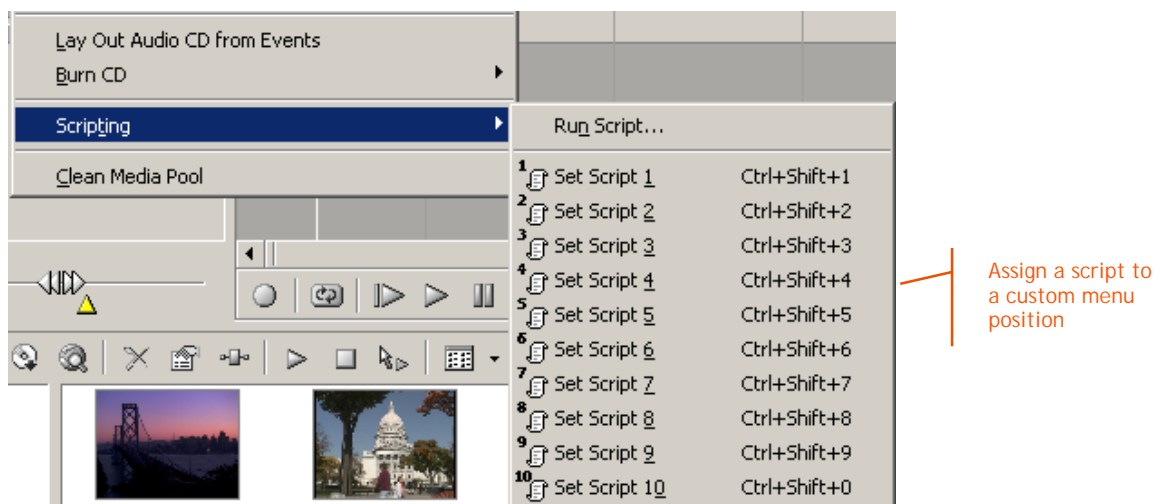


Figure 5.2
Assign frequently used scripts to the 10 custom positions to customize the Scripting submenu.



Application scripting: Writing scripts






















Scripting becomes an invaluable and powerful tool in the hands of someone who has the skills needed to write scripts. You can write scripts in two scripting languages: *JScript* or *vbScript.NET*. You can learn more about both of these scripting languages at <http://msdn.microsoft.com/library>. If you already know either of these languages (or similar languages such as JavaScript), then you are well on your way to creating scripts.

Now you need to know what you can and can't manipulate inside Vegas using scripts. The Vegas application disc contains the *Vegas 4 Scripting API Summary* document. To find it, navigate to the *Extras* folder on the Vegas installation CD-ROM. This document provides a summary of all public classes, properties, and methods exposed by the Vegas 4 scripting application programming interface (API). It serves as an invaluable reference when writing scripts.

Now write your script using your favorite text editor. If you want to start slowly, open one of the scripts included in the *Extras* folder on the Vegas installer CD-ROM in your text editor. Take a look around to see how the script author constructed the script. Go ahead and make changes to the script, save it as a new script with a different name, and run it to see if you get the results you're after. As with any script or computer program, it helps tremendously to use comments liberally so you can explain what a section of the script does. This is especially helpful for other people who may need to revise your script, or even for yourself if you have to come back later and revise the script yourself. When you're done with the script, save it as a *.js* or *.vb* file (depending, of course, upon the scripting language you use to write the script.) You can now choose **Tools | Scripting | Run Script** and run your new script to test it out.

Appendix A: Index of buttons

This index lists all of the buttons mentioned in this document. To jump to the section that contains the discussion of a button, click on the button name in the list.

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Bypass All Video FX	
Bypass Motion Blur	
Choose Adjustment Color	
Choose Complementary Color	
Copy Snapshot	
Define Effect Range	
Device Selection	
Edit Chain	
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Move Freely	
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Split Screen View	
Track FX	
Video Output FX	

Appendix B: Table of Figures

This table lists the captions for every figure in this document, and gives a page reference so you can quickly find the figure. Click on the caption to jump to the location of that figure in the document.

The <i>Sonic Foundry Color Corrector</i> filter gives you independent control over the low, mid, and high tones of your video.	5
The <i>Sonic Foundry Color Corrector (Secondary)</i> filter enables you to isolate specific portions of your video to pin-point your color corrections.	7
Use the <i>Vectorscope Monitor</i> to make sure your video is broadcast safe and for color correction.	9
The <i>Video Waveform Monitor</i> makes it easy to see if your video's luminance values are outside of the broadcast-safe range.	10
Check your color levels and contrast with the Histogram Monitor.	11
Use the RGB Parade Monitor to isolate the red, green, and blue channels.	11
The video bus track appears in a new section below the Track list and timeline.	13
The Parent Overlay Mode button appears when you establish a parent/child relationship between two or more tracks.	15
The Pre/Post Toggle button dictates whether the video filter is applied to your video before or after your Event Pan/crop settings.	16
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The Audio Device tab of the Preference dialog.	19
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Double-click a track's pan control to access the larger Surround Panner.	20
The Surround Panner window shows the movement of the sound through the 5.1 field.	21
The Audio Plug-In window now gives you access to audio FX automation.	22
Choose the Automatable folder to show just the automatable plug-ins installed on your system.	22
Choose the FX you want to automate in the FX Automation Chooser window.	23
Show and hide the various automation envelopes on your track.	23
Automation envelopes applied to Track 1.	24
Use the master bus track to create a fade-out ending for a multi-track project.	26
Set your project up like this one to experiment with post-edit ripples.	27
The ripple arrow shows the distance Event 1 was moved and indicates the amount the other events will be rippled.	28
Events 2 and 3 have rippled by a distance equal to the length of the ripple arrow to maintain their original relationship to Event 1. No other events are affected.	28
You can set automatic post-edit ripple mode to any of the three behaviors.	29
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Arrange three events on the same track.	31

Choose Shuffle Events from the menu.	31
The events have been reordered allowing you to quickly storyboard your video in preparation for detailed editing. Event shuffling works for audio events as well.	31
The Video Preview window shows the first and last frame of the event while you perform a slip/trim edit.	32
The arrow enables you to choose the split-screen mode you want to use.	33
The split-screen view enables you to compare the video with and without the video filter. ...	33
The split-screen view enables you to compare frames for color correction. The color-corrected frame on the right shows the same video clip with the purples removed.	34
Media markers now appear in events on the timeline. They can help you to find exact edit points and have other uses.	35
The Media Pool now allows you to easily organize and search your media.	37
Nest bins within bins to create a bin structure and organize your project media.	37
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You can search your Media Pool to find just the clip you want.	39
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