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Adjust image sharpness and blur

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Photoshop offers a variety of tools, filters, and masks that give you fine control over image sharpness (or blur).

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Improved Smart Sharpen

Pete Collins demonstrates Smart Sharpening improvements in Photoshop CC...

Pete Collins

Video | Selective focus in Photoshop

Photoshop Playbook: Selective Focus

▶

Photoshop Principal Product Manager Bryan O'Neil Hughes explains how to blur a background and m[...]
blur gallery in Photoshop.

Bryan O'Neil Hughes
http://www.photoshop.com/people/bryan

Sharpening recommendations

Sharpening enhances the definition of edges in an image. Whether your images come from a digital camera or a scanner, most images can benefit from sharpening. The degree of sharpening needed varies depending on the quality of the digital camera or scanner. Keep in mind that sharpening cannot correct a severely blurred image.

Tips for better sharpening:

- Sharpen your image on a separate layer so that you can resharpen it later to output to a different medium.

- If you sharpen your image on a separate layer, set the layer's blending mode to Luminosity to avoid color shifts along edges.

- Sharpening increases image contrast. If you find that highlights or shadows are clipped after you sharpen, use the layer blending controls (if you sharpen a separate layer) to prevent sharpening in highlights and shadows. See Specify a tonal range for blending layers.

- Reduce image noise before sharpening so that you don't intensify the noise.

- Sharpen your image multiple times in small amounts. Sharpen the first time to correct blur caused by capturing your image (scanning it or taking it with your digital camera). After you've color corrected and sized your image, sharpen it again (or a copy of it) to add the appropriate amount of sharpening for your output medium.

- If possible, judge your sharpening by outputting it to the final medium. The amount of sharpening needed varies among output media.

Use the Unsharp Mask (USM) filter or the Smart Sharpen filter for better control when sharpening your images. Although Photoshop also has the Sharpen, Sharpen Edges, and Sharpen More filter options, these filters are automatic and do not provide controls and options.

You can sharpen your entire image or just a portion using a selection or mask. Because the Unsharp Mask and Smart Sharpen filters can be applied to only one layer at a time, you might need to merge layers or flatten your file to sharpen all image layers in a multilayered file.

Note:

> The name Unsharp Mask comes from a darkroom technique
> used in traditional film-based photography. The filter sharpens
> images rather than the opposite.

Sharpen using Smart Sharpen

The Smart Sharpen filter has sharpening controls not
available with the Unsharp Mask filter. You can set the
sharpening algorithm or control the amount of sharpening
that occurs in shadow and highlight areas.
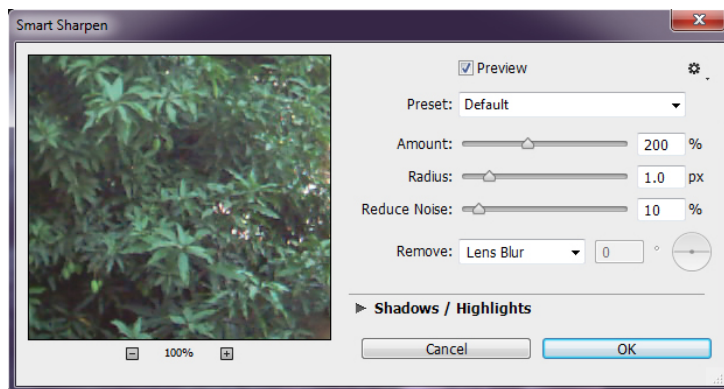
(Photoshop CC) Smart Sharpen dialog box

1   Zoom the document window to 100% to get an
accurate view of the sharpening.

2   Choose **Filter > Sharpen > Smart Sharpen.**

3   Set the controls in the Sharpen tabs:

Amount   Sets the amount of sharpening. A higher
value increases the contrast between edge pixels,
giving the appearance of greater sharpness.

Radius Determines the number of pixels surrounding the edge pixels affected by the sharpening. The greater the radius value, the wider the edge effects and the more obvious the sharpening.

Reduce Noise *(Photoshop CC only)* Reduce unwanted noise while keeping important edges unaffected.

Remove Sets the sharpening algorithm used to sharpen the image. **Gaussian Blur** is the method used by the Unsharp Mask filter. **Lens Blur** detects the edges and detail in an image, and provides finer sharpening of detail and reduced sharpening halos. **Motion Blur** attempts to reduce the effects of blur due to camera or subject movement. Set the Angle control if you choose Motion Blur.

Angle Sets the direction of motion for the Motion Blur option of the Remove control.

More Accurate *(CS6 only)* Processes the file slowly for a more accurate removal of blurring.

4. Adjust sharpening of dark and light areas using in the Shadow and Highlight tabs. (Click the Advanced button to display the tabs). If the dark or light sharpening halos appear too strong you can reduce them with these controls, which are only available for 8-bits and 16-bits-per-channel images:

Fade Amount Adjusts the amount of sharpening in the highlights or shadows.

Tonal Width Controls the range of tones in the

shadows or highlights that are modified. Move the slider to the left or right to decrease or increase the Tonal Width value. Smaller values restrict the adjustments to only the darker regions for shadow correction and only the lighter regions for highlight correction.

Radius Controls the size of the area around each pixel that is used to determine whether a pixel is in the shadows or highlights. Moving the slider to the left specifies a smaller area, and moving it to the right specifies a larger area.

5 Click OK.

Sharpen using Unsharp Mask

The Unsharp Mask sharpens an image by increasing contrast along the edges in an image. The Unsharp Mask does not detect edges in an image. Instead, it locates pixels that differ in value from surrounding pixels by the threshold you specify. It then increases the contrast of neighboring pixels by the amount you specify. So, for neighboring pixels the lighter pixels get lighter and the darker pixels get darker.

In addition, you specify the radius of the region to which each pixel is compared. The greater the radius, the larger the edge effects.
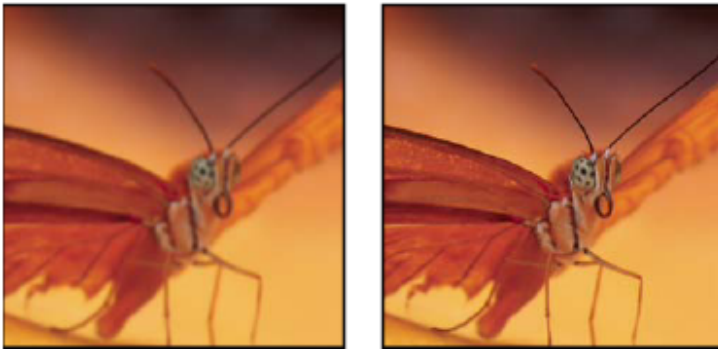
Original image, and Unsharp Mask applied

The degree of sharpening applied to an image is often a matter of personal choice. Keep in mind that oversharpening an image produces a halo effect around the edges.

Oversharpening an image produces a halo effect around the edges.

The effects of the Unsharp Mask filter are more pronounced on-screen than in high-resolution output. If your final destination is print, experiment to determine what settings work best for your image.

1. (Optional) If your image is multilayered, select the layer containing the image you want to sharpen. You can apply Unsharp Mask to only one layer at a time, even if layers are linked or grouped. You can merge the layers before applying the Unsharp Mask filter.

2   Choose Filter > Sharpen > Unsharp Mask. Make sure
          the Preview option is selected.

> **Note:**
>
> Click the image in the preview window and hold
> down the mouse to see how the image looks
> without the sharpening. Drag in the preview window
> to see different parts of the image, and click + or − to
> zoom in or out.

Although there is a preview window in the Unsharp
Mask dialog box, it's best to move the dialog box so
you can preview the effects of the filter in the
document window.

3   Drag the Radius slider or enter a value to determine
          the number of pixels surrounding the edge pixels
          that affect the sharpening. The greater the radius
          value, the wider the edge effects. And the wider the
          edge effects, the more obvious the sharpening.
          The Radius value varies according to the subject
          matter, the size of the final reproduction, and the
          output method. For high-resolution images, a Radius
          value between 1 and 2 is usually recommended. A
          lower value sharpens only the edge pixels, whereas
          a higher value sharpens a wider band of pixels. This
          effect is much less noticeable in print than
          on-screen, because a 2-pixel radius represents a
          smaller area in a high-resolution printed image.

4   Drag the Amount slider or enter a value to
          determine how much to increase the contrast of
          pixels. For high-resolution printed images, an
          amount between 150% and 200% is usually
          recommended.

5   Drag the Threshold slider or enter a value to determine how different the sharpened pixels must be from the surrounding area before they are considered edge pixels and sharpened by the filter. For instance, a threshold of 4 affects all pixels that have tonal values that differ by a value of 4 or more, on a scale of 0 to 255. So, if adjacent pixels have tonal values of 128 and 129, they are not affected. To avoid introducing noise or posterization (in images with flesh tones, for example), use an edge mask or try experimenting with Threshold values between 2 and 20. The default Threshold value (0) sharpens all pixels in the image.

> **Note:**
>
> If applying Unsharp Mask makes already bright colors appear overly saturated, choose Edit > Fade Unsharp Mask and choose Luminosity from the Mode menu.

Sharpen selectively

You can sharpen parts of your image by using a mask or a selection to prevent sharpening in certain parts of your image. For example, you can use an edge mask with the Unsharp Mask filter on a portrait to sharpen the eyes, mouth, nose, and outline of the head, but not the texture of the skin.

Using an edge mask to apply the Unsharp Mask only to specific features in an image

Sharpen a selection

1   With the image layer selected in the Layers panel, draw a selection.

2   Choose Filter > Sharpen > Unsharp Mask. Adjust the options and click OK.
Only the selection is sharpened, leaving the rest of the image untouched.

Sharpen an image using an edge mask

1   Create a mask to apply sharpening selectively. There are many ways to create an edge mask. Use your favorite method, or try this one:

- Open the Channels panel and select the channel that displays the grayscale image with the greatest contrast in the document window. Often, this is the green or the red channel.
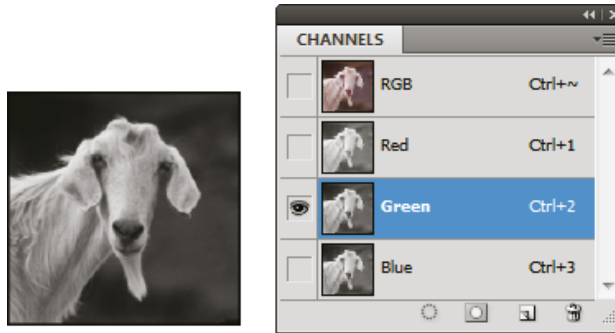
Selecting a channel with the greatest contrast

- Duplicate the selected channel.

- With the duplicate channel selected, choose
  Filter > Stylize > Find Edges.

- Choose Image > Adjustments > Invert to invert
  the image.
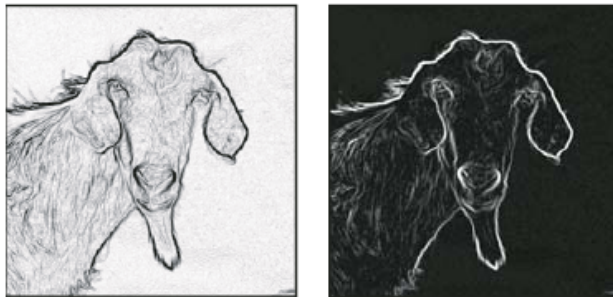
Find Edges filter applied and image inverted

- With the inverted image still selected, choose
  Filter > Other > Maximum. Set the radius to a
  low number and click OK to thicken the edges
  and randomize the pixels.

- Choose Filter > Noise > Median. Set the radius to
  a low number and click OK. This averages the
  neighboring pixels.

- Choose Image > Adjustment > Levels and set the
  black point high to get rid of random pixels. If

necessary, you can also paint with black to
retouch the final edge mask.

*Setting the black
point high in Levels
to eliminate
random pixels in
the edge mask*

- Choose Filter > Blur > Gaussian Blur to feather
  the edges.

Note:

The Maximum, the Median, and the **Gaussian Blur**
filters soften the edge mask so that the sharpening
effects blend better in the final image. Although all
three filters are used in this procedure, you can
experiment using only one or two.

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2   In the Channels panel, Ctrl-click (Windows) or
Command-click (Mac OS) the duplicate channel to
make the edge mask a selection.

3   In the Layers panel, select the image layer. Make
sure the selection is still visible on the image.

4   Choose Select > Inverse.

5   With the selection active on the image layer, choose
Filter > Sharpen > Unsharp Mask. Set the desired
options and click OK.

To view your results, select the RGB channel in the Channels panel and deselect the selection in the image.

> **Note:**
>
> You can create an action to conveniently apply all the steps in the procedure.

Add lens blur

Add blur to an image to give the effect of a narrower depth of field so that some objects in the image stay in focus and others areas are blurred. You can use a simple selection to determine which areas are blurred, or you can provide a separate alpha channel *depth map* to describe exactly how you want the blur added.

The Lens Blur filter uses the depth map to determine the position of pixels in an image. With a depth map selected, you can also use the crosshair cursor to set the starting point of a given blur. You can use alpha channels and layer masks to create depth maps; black areas in an alpha channel are treated as though they're at the front of the photo, and white areas are treated as if they're far in the distance.

> **Note:**
>
> For a gradual blurring effect (none at the bottom to maximum at the top), create a new alpha channel and apply a gradient so that the channel is white at the top of the image and black at the bottom. Then select the Lens Blur filter and choose the alpha channel from the Source pop-up menu. To change the direction of the gradient, select the Invert check box.

The way the blur appears depends on the iris shape you choose. The number of blades determines the iris shape. You can change blades of an iris by curving them (making them more circular) or rotating them. You can also reduce or magnify the preview by clicking the minus button or the plus button.

1   Choose Filter > Blur > Lens Blur.

2   For Preview, choose Faster to generate quicker previews. Choose More Accurate to view the final version of the image. More Accurate previews take longer to generate.

3   For Depth Map, choose a source (if you have one) from the Source pop-up menu. Drag the Blur Focal Distance slider to set the depth at which pixels are in focus. For example, if you set focal distance to 100, pixels at 1 and at 255 are completely blurred, and pixels closer to 100 are blurred less. If you click in the preview image, the Blur Focal Distance slider changes to reflect the clicked location and brings the depth of the clicked location into focus.

4   To invert the selection or alpha channel you're using as the depth map source, select Invert.

5   Choose an iris from the Shape pop-up menu. If you wish, drag the Blade Curvature slider to smooth the edges of the iris, or drag the Rotation slider to rotate it. To add more blur, drag the Radius slider.

6   For Specular Highlight, drag the Threshold slider to
     select a brightness cutoff; all pixels brighter than the
     cutoff value are treated as specular highlights. To
     increase the brightness of the highlights, drag the
     Brightness slider.

7   To add noise to an image, choose Uniform or
     Gaussian. To add noise without affecting color,
     choose Monochromatic. Drag the Amount slider to
     increase or decrease noise.

> **Note:**
>
> Blurring removes film grain and noise from the
> original image. To make the image look realistic and
> unretouched, you can return some of the removed
> noise to the image.

8   Click OK to apply the changes to your image.

Blur image areas

The Blur tool softens hard edges or reduces detail in an
image. The more you paint over an area with the tool, the
blurrier it becomes.

1   Select the Blur tool 💧.

2   Do the following in the options bar:
     - Choose a brush tip and set options for the
       blending mode and strength in the options bar.

     - Select Sample All Layers in the options bar to

blur using data from all visible layers. Deselect this option and the tool uses data from only the active layer.

3   Drag over the part of the image you want to blur.

Sharpen image areas

The Sharpen tool increases contrast along edges to increase apparent sharpness. The more you paint over an area with the tool, the more sharpening increases.

1   Select the Sharpen tool △. (If the tool isn't visible, hold down the Blur ○ tool.)

2   Do the following in the options bar:
- Choose a brush tip and set options for the blending mode and strength.

- Select Sample All Layers to sharpen using data from all visible layers. If this is deselected, the tool uses data from only the active layer.

- Select Protect Detail to enhance details and minimize pixelated artifacts. Deselect this option if you want to produce more exaggerated sharpening effects.

3   Drag over the part of the image you want to sharpen.

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