HIGH DYNAMIC RANGE PROCESSING

Photoshop's HDR feature merges several fames with varying exposure to render details over a wider range of tonality than what a normal shot can render with either film or a digital chip. If your subject has a tonal range that is greater than 9 stops, as would happen with a interior shot with a view of out a window with strong light outside.

SHOOTING

Below are suggestions for getting the best result from the HDR software. As creative people, we are also interested in using the software in unorthodox ways to stretch its usefulness. But lets get it 'right' first so we can determine its capability.

shoot with a tripod so frames are perfectly aligned
Photoshop's **ALIGN LAYERS** can be used, but will not render optimum results
shoot at least 5 bracketed frames for best results
separate the shots by at least 1 stop
vary the exposures with shutter speed rather than aperture or changing ISO
changing the aperture can produce inconsistencies in depth of field
resulting in blurring
if some part of the subject is moving, ghosting can occur

LOADING FILES into HDR

There are 2 options for loading files into HDR, from Bridge or from within Photoshop itself.

Bridge: select all pix,
TOOLS> PHOTOSHOP> MERGE TO HDR…

PhotoShop: **FILE> AUTOMATE> MERGE TO HDR…**
SOURCE FILES> BROWSE

BASIC ADJUSTMENTS

A **MANUALLY SET EV** dialog box will open that allows an adjustment of each photo in the series.
It is possible to adjust
exposure time *f*/stop ISO
note: you will have to step through all photos in the series, and then back again before the [**OK**] button is not grayed out

Set the White Point Preview
set the **WHITE POINT**
as you would in a **LEVELS** adjustment layer

The **MERGE TO HDR** window will open

The resulting window is in 'floating point 32-bit mode' that allows high precision calculations resulting in very fine resolution. Individual frames in the menu to the left can be toggled on or off as desired.
move the slider to set the **WHITE POINT** for viewing the HDR image.
double-click the slider to return to the **DEFAULT** exposure setting.
note: Since the adjustment is made for that viewing window, you can have the same HDR image open in multiple windows, each with a different preview adjustment! Preview adjustments made with this method are not stored in the HDR image file.

ADJUSTING DYNAMIC RANGE VIEW FOR HDR IMAGES

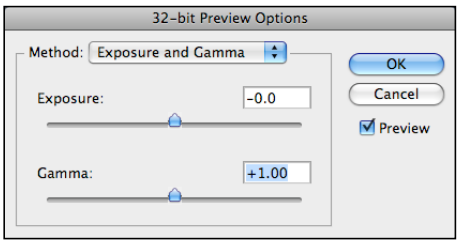
The dynamic range of an HDR image exceeds the display capabilities of standard computer monitors. When you open an HDR image in Photoshop, it can look very dark or washed out. Photoshop lets you adjust the preview so that the monitor displays an HDR image whose highlights and shadows aren't washed out or too dark.

Preview adjustments don't edit the HDR image file. All the HDR image information remains intact.

Use the Exposure Adjustment to make exposure edits.

adjust 32-bit Preview Options

IMAGE > ADJUSTMENTS > EXPOSURE



2 Methods are available

EXPOSURE AND GAMMA

manually adjusts brightness and contrast
and has 2 sliders

adjust **GAMMA** first
to get a good tonal balance, first
lower gamma gives greater contrast
then,

adjust the **EXPOSURE** to get the desired brightness

HIGHLIGHT COMPRESSION

compresses the highlight values in the HDR image
so they fall within the luminance values range of the 8- bit or 16-bit image file
note: this is an automatic adjustment with no user options

click [**OK**] to finish

note: tonal values can be displayed in the **INFO** panel

open the **INFO** panel **WINDOW> INFO** [**F8**]

click the **EYEDROPPER** icon in the **INFO** panel

choose 32-bit from the pop-up menu.

to view 32-bit readouts in the Info panel

okay for checking the color balance,
but not really that functional

note: a previously merged HDR file can be reopened and manipulated

open a 32-bit HDR image in Photoshop

choose **VIEW> 32-BIT PREVIEW OPTIONS**

choose an option from the **METHOD** menu:

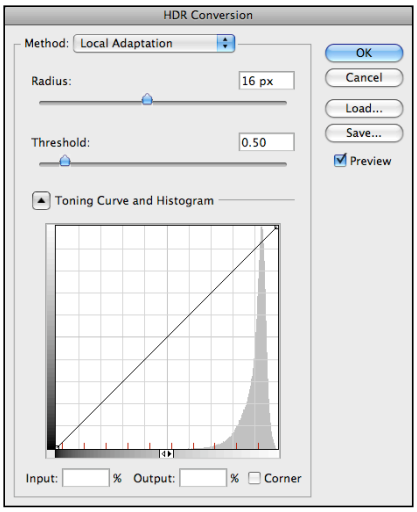
in the **32-BIT PREVIEW OPTIONS** dialog box that opens

CONVERT HDR FILES

Once the Preview is set, convert the file to either 8 or 16 bit mode. This is where another set of options are available.

convert to 8 or 16-bit **IMAGE> MODE> 8 BITS / CHANNEL**
IMAGE> MODE> 16 BITS / CHANNEL

the **HDR CONVERSION** panel opens



4 methods are available:

EXPOSURE AND GAMMA

This method lets you manually adjust the exposure and gamma, which serve as the equivalent to **BRIGHTNESS** and **CONTRAST** adjustment, respectively.

HIGHLIGHT COMPRESSION

This method has no options and applies a custom tonal curve, which greatly reduces highlight contrast in order to brighten and restore contrast in the rest of the image.

EQUALIZE HISTOGRAM

This method also has no options and attempts to redistribute the HDR histogram into the contrast range of a normal 16 or 8-bit image. This uses a custom tonal curve that spreads out histogram peaks so that the histogram becomes more homogenous. It generally works best for image histograms that have several relatively narrow peaks with no pixels in between.

LOCAL ADAPTATION

This is the most flexible method and probably the one that is of most use to photographers. Unlike the other three methods, this one changes how much it brightens or darkens regions on a per-pixel basis (similar to local contrast enhancement). This has the effect of tricking the eye into thinking that the image has more contrast, which is often critical in HDR images that lack contrast. This method also allows changing the tonal curve manually to better suit the image.

adjust the curve to give the best tonal range
this will depend on the image content
adjust **RADIUS** to control the mask blur
adjust **THRESHOLD** to set what gets blurred and what doesn't
make sure there are no halos in the photo
Badly converted HDR images have a glow around the areas of contrast

maintain good shadow density
or the photo will look washed out and fake

hit [**OK**] to make the conversion

ADDITIONAL HDR ADJUSTMENTS

More adjustments may be needed to tweak the photo to perfection after converting the picture to a working 8-bit or 16-bit file. An increase in contrast generally increases color saturation

reduce saturation with a **HUE/SATURATION** adjustment layer
fine tune with **LEVELS** and **CURVES**, if needed

ADJUST EXPOSURE for HDR IMAGES

The Exposure adjustment is designed for making tonal adjustments to HDR images, but it works with 8-bit and 16-bit images. Exposure works by performing calculations in a linear color space (gamma 1.0) rather than the current color space.

Do one of the following:

click the Exposure icon or an Exposure preset in the Adjustments panel.
choose Layer > New Adjustment Layer > Exposure.

Note: You can also choose Image > Adjustments > Exposure. But keep in mind that this method makes direct adjustments to the image layer and discards image information. Adjustment layers for 32-bit images are available in Photoshop Extended only.

In the Adjustments panel, set any of the following options:

EXPOSURE
Adjusts the highlight end of the tonal scale
with minimal effect in the extreme shadows.

OFFSET
Darkens the shadows and midtones
with minimal effect on the highlights.

GAMMA
Adjusts the image gamma, using a simple power function.
Negative values are mirrored around zero
(that is, they remain negative but still get adjusted as if they are positive).

EYEDROPPERS
adjust the luminance values of images
(unlike the Levels eyedroppers that affect all color channels).
the **SET BLACK POINT EYEDROPPER**
sets the Offset, shifting the pixel you click to zero.
the **SET WHITE POINT EYEDROPPERS**
sets the Exposure, shifting the point you click to white
(1.0 for HDR images).
the **MIDTONE EYEDROPPER** sets the midtone
making the value you click middle gray.