A decorative graphic on the left side of the image, consisting of white lines and circles on a blue background, resembling a circuit board or data flow diagram. The lines are vertical and horizontal, with small circles at various points, suggesting nodes or connections in a network.

COMPUTERS FOR PHOTOGRAPHERS

HARDWARE REQUIREMENTS

The five most important hardware components for editing in Lightroom and Photoshop are:

- The Processor (CPU)
- The Graphics card/unit (GPU)
- Memory (RAM)
- Storage Drives (SSDs and HDDs)
- Monitor

HEAT UP YOUR HARDWARE

Photoshop is more processor (CPU) intensive than graphics card (GPU) intensive

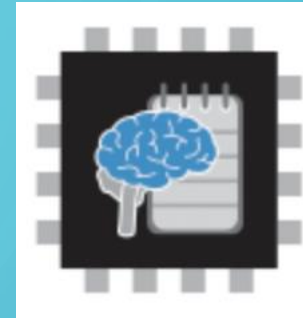
- A recommended (not required) configuration for optimal performance is
 - A computer with 8-cores or more for your CPU - Intel® or AMD processor with 64-bit support; 2 GHz or faster processor. An Intel i5, i7 or i9 would provide enough processing power
 - A high-clocking (speed at which a CPU processes; expressed in Ghz) CPU will handle Adobe Photoshop much better than a CPU with a low clock rate but a high number of cores (6 cores @ 3.6Ghz would be better than 8 cores at 2.8Ghz)



HEAT UP YOUR HARDWARE

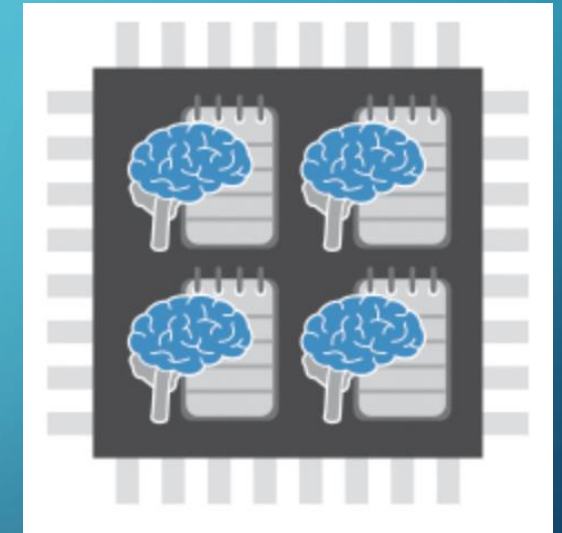
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Old
CPU's

Four core CPU



MASS STORAGE

Hard drives

- A fast (7200 rpm) internal Serial-ATA drive is sufficient
- For optimal performance
 - Use solid state for Lightroom cache and catalog
 - Put photos and Lightroom catalog on separate drives
- If using an external drive for photos make sure that you have a fast connection. For best performance, connect the external drive to a compatible port that has the highest bandwidth limit of all the available ports. The bandwidth limits for various ports are listed below:
 - Thunderbolt = Up to 40GB/sec
 - USB3.1 & 3.2 = 5-10GB/sec
 - USB2 = 480MB/sec



DON'T FORGET MEMORY

Minimum Specs	Recommended Specs	Not Recommended
12 GB DDR4 2400MHZ or higher	16 – 64 GB DDR4 2400MHZ	Anything less than 8 GB RAM

Problems if you don't have enough memory (RAM)

- The computer won't have enough memory to work with the large Photoshop files. Each new camera generation creates larger files
- Applying filters and brushes will be slow
- Photoshop tools will start lagging
- If it comes down to a choice, **investing in more RAM would be a better than a better graphics card.**



LET'S GET GRAPHIC

- Not all computers have a separate graphics “card”. If your computer has “Intel Graphics” it is probably part of the motherboard (i.e. laptops) and not a separate card
- Get a GPU (graphics processing unit) with DirectX12 support and at least 2 GB of GPU memory – 4GB recommended (more for video editing)
- The best graphics cards for Adobe applications are the Nvidia graphics cards. The Nvidia Geforce Graphics Card range would be your best bet especially the **GeForce RTX 3070 family**
- If your computer’s graphics processor is incompatible with Lightroom, uncheck the **Use Graphics Processor** check box in **Lightroom** (macOS)/**Edit** (Win) > **Preferences** > **Performance** (in Bridge, using Software Rendering may slow things down)



MORE IMPORTANT: CPU OR MEMORY?

Both are equally important

- A minimum of 8-cores is necessary for Photoshop to optimize its function so you do need a decent CPU
- At the same time, the more your file size increases the more RAM you need, and buying more RAM is not too pricey
- If you want to increase your memory, you will need to replace all of it. If you have 16Gb and want 32Gb, you won't be able to buy just 16Gb more. You will have to buy 32Gb and replace all existing memory.



MONITOR

Resolution – Full HD (1920x1080) is a minimum. UltraHD/4K (3840x2160) or higher, is best

Size – Bigger is better. Aim for at least 23" (diagonal)

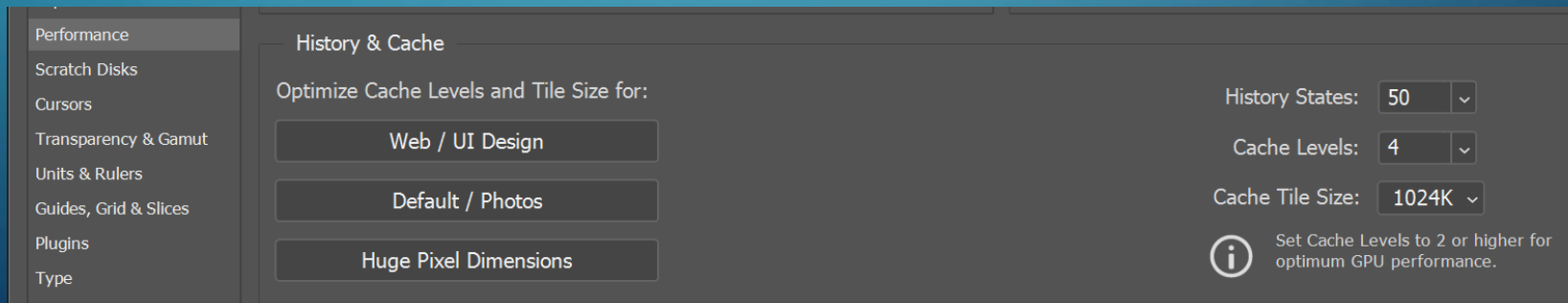
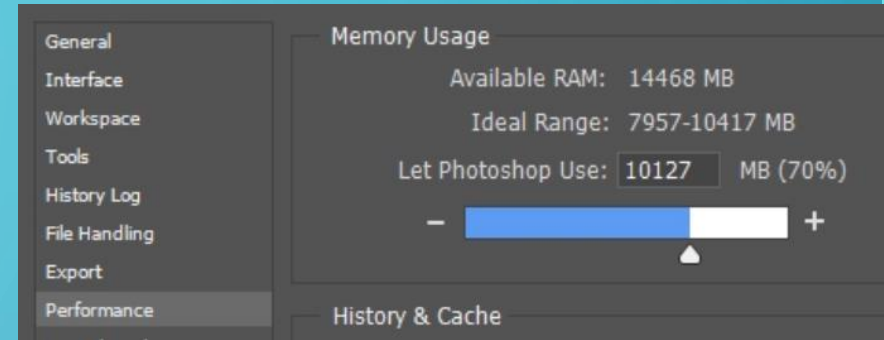
Color space - the monitor should cover at least 90% of sRGB and 70% of the Adobe RGB spectrums

Technology – Monitors with IPS (In Plane Switching) will provide the most accurate color

Calibration – For the best representation of color when trying to match to prints, calibrate your monitor using an external device

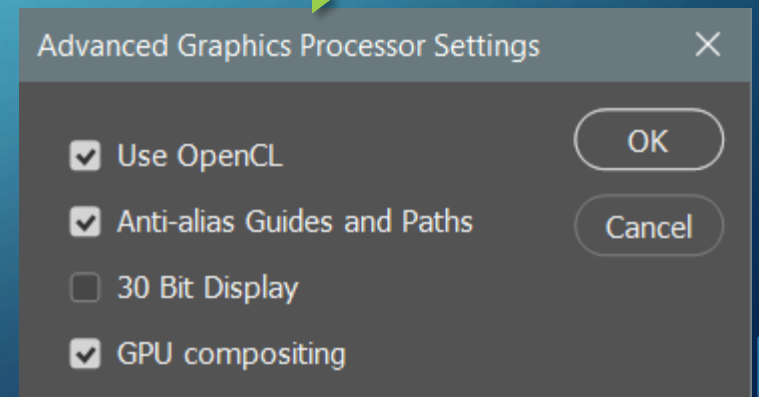
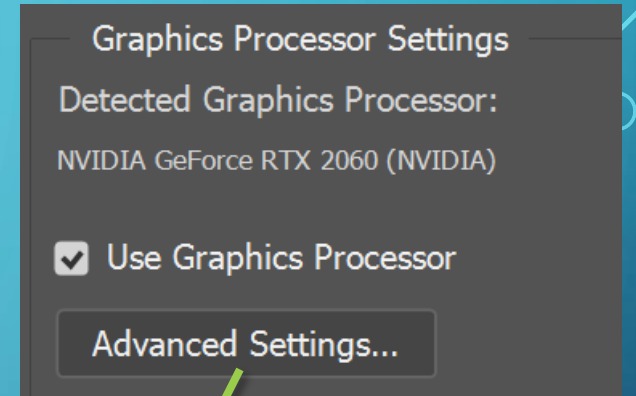
TUNE PHOTOSHOP FOR PERFORMANCE (PREFERENCES)

- Allow PS to use at least 70% of memory.
- Can increase memory usage – stop at 85%
- Choose the type of work you are doing in History & Cache
- Click on Huge Pixel Dimensions for more than 50MP files



TUNE PHOTOSHOP FOR PERFORMANCE

- If you have a graphics card that PS supports, check Use Graphics Processor (it will tell you if your computer doesn't support it)
- Turning on OpenCL is likely to improve performance if you use these Photoshop features:
 - Blur Gallery - Field Blur, Iris Blur, Tilt-Shift, Path Blur, Spin Blur (OpenCL accelerated)
 - Smart Sharpen (Noise Reduction – OpenCL accelerated)
 - Select and Mask (OpenCL accelerated)



TUNE PHOTOSHOP FOR PERFORMANCE

- Use a separate hard drive for Photoshop's Scratch Disk
- An SSD drive is ideal for a Scratch Disk
- Try not to use the same drive on which PS is installed
- You can monitor PS efficiency by clicking on the lower left of the screen. It defaults to Document Size.
- Click on the arrow and select Efficiency
- If it falls below 100%, the computer is using all the memory. Allocate more memory. If it falls below 90%, you may want to buy more memory

