

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

After some seven years of using my custom-built PC (circa 2007), the noise, heat and especially the lack of performance wore me down. The old, monolithic box was well past its best-by date, but doing photography for fun puts a damper on spending big bucks from meagre post-tax, discretionary funds. No more tax write offs from running a business.

Like Oleg, over the years, I kept pushing back the date of reckoning by doing incremental upgrades:

- Upgrading to larger capacity storage hard drives, from 1 TB, to 2 TB to 3 TB as my storage needs increased over the years
- Upgrading spinning Western Digital Raptor hard drives for OWC-sourced SSDs for the boot and Photoshop scratch disk
- Increasing the RAM from 8 GB to 16 GB

The last two upgrades provided modest improvements in performance, such that I thought I could make do and push the life of the computer to 10 years...or, so I thought.

After retiring from being a weekend warrior wedding photographer, my principal photography has been to photograph my two boys playing hockey. Depending on how trigger-happy I was, I would typically take 300-400 photographs from one game.

Similar to wedding photography, there has to be an editing session to trash the bad photos and work with a handful of okay photos – I say okay, because I'm under no illusion that I'm a good sports photographer. I take the photos to capture memories for the boys to enjoy years from now when they will be hockey-dads themselves.

A few hundred photos does not sound like much, since I used to take thousands of photos during a wedding. Unfortunately, even a few hundred photos becomes wastefully slow to edit with an old computer. I found that I would take the photos, import them into Adobe Lightroom's catalog, and then leave them to edit another day. Another day became another week, then another month and next thing you know, the hockey season is over and at best, I've edited a handful of photos (the best of my meagre bunch).

The reason, or culprit? The old PC with latency issues: click on the Crop tool then wait, crop then wait, move to the next image then wait to render preview, delete a photo then wait...you get the idea, right? Every mouse click required waiting a few seconds for the computer to catch up. You can put up with waiting for a handful of one-off edits, but it adds up to too much time wasted when dealing with hundreds of photos.

My 2007 PC was, if I say so myself only, a powerhouse once, back in the day when state of the art digital resolution was a whopping 12 MP (my still kicking Nikon D2X). The PC was based on Intel Xeon server CPUs; two quad core CPUs for eight cores on an Intel motherboard. The basic hardware is similar to what Apple offered for its Mac Pro of the day.

# 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

Back then, there was no problem with lag, but heat and noise were issues. The original fans, mounted to the dual processor Xeon CPUs, were incredibly loud and I eventually removed them to mount massive heat sinks for a passive cooling option. That reduced the noise dramatically, but I kept worrying about the cooling of the CPUs, so I installed large fans to the heat sinks to actively move away the heat generated by the CPUs. It was a Frankenstein-like solution and the innards of the PC resemble a rat's nest of cables, unlike the clean and elegant design of the tower Mac Pro.

As the digital era progressed and I transitioned away from 12 MP Nikon SLRs (D2X and D300) to a Canon 5D Mk II, the 21 MP files from the 5D2 revealed the performance shortcomings of the PC. The 5D2 came out in 2009 and even though my PC was built in 2007, the basic hardware was actually already aging – Apple introduced the Mac Pro using the same generation of Xeon CPUs in 2005.

I could not justify replacing a two-year old computer, especially with no more photography revenue to support the photography addiction. For five years, I made do, gritting my teeth each time I sat down to edit hundreds of hockey photos. What finally pushed me over the edge was buying the Canon 7D2 in late 2014 and nearly doubling the number of photos thanks to the 7D2's 10 fps capabilities where one light release of the shutter instantly fires off a three-round burst – not unlike the current variant of the famous M16 assault rifle ;-)

I just could not face having to edit 500-600 photos from one game with the old PC. Unlike my usual practice of buying first and begging for forgiveness after, I consulted the family CFO and told her of my plan to buy a new computer. She, of course, balked at such a frivolous use of money, but I used my charm to persuade her...actually, I tickled her into submission. The permission was easier to grant because I could receive an interest-free loan from my workplace and repay the loan over a reasonable period. Now, what to buy?

## The Decision

The natural decision for a person using PCs since he was a teenager (remember MS-DOS), would be to build another custom PC, this time dispensing with exotic and expensive Xeon processors for an i7 CPU with quad or hex cores. SSDs or even a PCIe based SSD for maximum speed and a smoking-fast GPU. It goes without saying that I would load the new computer up with as much RAM as I could afford; minimum 32 GB but more ideally, 64 GB (why not?)

However, I fell victim to Steve Jobs' gambit of producing desirable consumer products such as iPods, iPhones and iPads to entice users to the Mac side. Since 2009, I've been using a MacBook and then a MacBook Pro as my everyday, general use computer, firing up the big PC only when I needed to do some specific and specialized chores.

I was ready to dive down the Mac rabbit hole and leave PC hardware behind, because since 2009, I've come to appreciate the Mac design and build quality. Note that I say hardware and not Windows, because I've never been a Microsoft or Windows basher and neither am I a Machead (I think?) I appreciate both systems and offerings and am fine using either OS, but just

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

like that Apple has better and tighter integration of hardware working with its OS. Plus, if I don't buy a good Mac, I'd always be wondering just how green that grass is at 1 Infinite Loop...

With the decision made to go with a Mac, it was now a decision about which Mac to buy. I could go with a:

- portable powerhouse in the 15-inch MBP
- quad-core i7 iMac (27-inch Retina version)
- redesigned 2013 Mac Pro, aka, the Death Star, or more derisively, the trash can Mac

While the option to go portable with an MBP is enticing, the inability to do easy upgrades to the RAM and hard drive gave me pause. In fact, no RAM upgrade is possible due to the memory modules now soldered to the logic board. While the SSD can be upgraded, as of this writing, there are no third party options available, although OWC is working hard on this front. Incidentally, based on OWC's testing, it is possible to mount the high-performance PCIe SSD from the 2013 Mac Pro in the MBP. However, "possible" does not mean recommended, due to OWC not knowing yet if there will be long-term, thermal stability issues.

The iMac allows the user to upgrade the RAM to a maximum of 32 GB, which seems plenty for most users, but upgrading the hard drive requires specialized tools and some technical savvy to take it apart to access the hard drive. For most people, buying an iMac will be a set decision once the hard drive choice has been made. For me, I never liked the idea of a hard-to-access and replace hard drive, which is why the only iMac that makes sense to me is one that uses an SSD for better stability and longevity. But, own a computer long enough and even a SSD will eventually have to be replaced once it reaches its maximum write cycles.

The full-blown Retina iMac with a SSD became an intriguing option, but once I configured the top of the line version, the over \$5,000 CAD price brought me back to reality. I'm not the first to note this, but it always seems that the computer you want costs \$5,000 (remember the original Mac from 1984; guess how much it cost?) Knowing that the computer would just be the start of an expensive investment (new set of peripherals to support it), the difficult to upgrade Retina iMac did not offer enough value to warrant purchase.

What does that leave me with...

### **The Trash Can**

The 2013 Mac Pro is a beautifully designed and built computer that hardly warrants being called a trash can, but the shape is what it is. A Mac Pro has been an object of desire for many years, but I could not abide by paying full price for obsolete technology for the tower Mac Pro available prior to the 2013 model. Those old models are faster than my PC, yes, but hardly cutting edge with USB 2 and Firewire as the main peripheral ports. The 2013 model offers four USB 3 and six Thunderbolt ports, which for the USB 3 ports, is still not enough.

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

The lack of enough I/O ports leads to the design that many find limiting with the 2013 Mac Pro. By cramming the CPU, dual-GPU, RAM and PCIe SSD into a very compact package, there is simply no space for adding additional storage drives. Apple expects users to connect external drives via USB 3 and Thunderbolt, which put me off at first, but I eventually resigned myself to having to do this.

Thankfully, USB 3 throughput is fast enough that most users will never know the difference between an internally mounted or externally mounted drive. Thunderbolt is faster yet, but you will only get that faster speed with SSD drives, and it's not like there are many cost-effective Thunderbolt cases available. Large capacity SSDs are also far too expensive for the amount of storage many photographers require.

With a limited budget available, I had to stretch the money as far as possible, which meant biding my time to when the 2013 Mac Pro became available in the refurbished section of the online Apple Store. When it finally did appear in late 2014, it became obvious that I could only afford the base model, offering:

- One 3.7 GHz quad core Xeon CPU (Ivy Bridge)
- Dual AMD FirePro D300 GPUs
- 12 GB of 1866 MHz RAM
- 256 GB PCIe-based flash storage

This base model new, is \$3,300 CAD, but I purchased my refurbished unit for \$2,629 – there are sales taxes on top of these prices, but due to the varying amounts found across Canada, I am not including them in the prices mentioned in this article. For the record though, as of this writing, in British Columbia, I have to add another 12% to the purchase price.

Let's consider each of the key technical specs of the base model:

### **Single, 3.7 GHz quad core CPU**

The Ars Technica review of the 2013 Mac Pro noted the unusualness of utilizing only a single Xeon processor, whereas most configurations are dual-processor. However, while only offering one CPU, you can opt for up to 12 cores...for the princely upgrade price of \$3,000 CAD. If you max out all the key options, Apple will gladly take your \$9,900 CAD.

Choosing a CPU with more cores is certainly nice if you can afford it, but while more cores is something video editors and animators will appreciate; photographers, not so much. As I understand it, Adobe has not been particularly skillful in coding Photoshop and Lightroom to maximize multi-core CPUs. Buying a \$10,000 12-core Mac Pro is not a wise way to spend your money if you seek performance for stills editing. For now, a fast clock speed will be more useful, which is why a 3.7 GHz quad core doesn't come off so badly. For what it's worth, the iMac can be faster than the Mac Pro for single-processor tasks thanks to faster clock speeds.

# 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

## Dual AMD D300 GPUs

There are three GPU options, with the D300 being the lowest cost. For stills editing, the smart money says to save the money over the D500 or D700 options.

## 12 GB of RAM

The base amount of RAM could probably have sufficed for a little while, but I budgeted for an almost immediate upgrade, but not from Apple. Apple charges an upgrade price of \$1,200 CAD for 64 GB of RAM when configuring a new Mac Pro. No upgrade options are available for refurbished units, but Apple will sell you RAM separately at the following prices (all in CAD):

- 4 GB at \$100 per module
- 8 GB at \$200 per module
- 16 GB at \$400 per module

I could mix and match an assortment of modules and spend from \$100 to a whopping \$1,600 to max out at 64 GB of 1866 MHz RAM. Or, I could buy 64 GB of 1866 MHz RAM from NewEgg Canada for less than half the cost of what Apple Canada charges. Do I really need 64 GB of RAM? Probably not, but since I expect to own this Mac Pro for a long time and the marginal cost to go from 32 GB to 64 GB was not that much more, I bit the bullet and bought Mushkin-branded RAM. No problems encountered since replacing the stock Apple RAM for the Mushkin modules.

## 256 GB Flash Storage

This is the one spec that I did worry about, because 256 GB is simply not enough to store all that I want in a single-drive computer.

I decided that my new Mac Pro will be a dedicated photo-editing computer with only the minimum of software needed to do this task. Unlike my Windows 7 PC, which had all sorts of apps installed, from Office to Adobe and other sundry and infrequently used apps, the Mac Pro has Adobe Photoshop 2014, Adobe Bridge and Lightroom 5 (from Adobe's subscription-based Creative Cloud). Add in SuperDuper for backing up the drive, some drivers for the printers and Wacom Bamboo graphics tablet and that is pretty much it. No Office, no Firefox, no Flash player, no Java, nothing except VLC so I can watch the occasional HD movie file. The Mac Pro is as ascetic as I could configure it. I may install HandBrake at some point when the need arises to convert video files from one format to another (for example, to watch on an iPad - the Mac Pro is the most powerful of my three computers, so it only makes sense to utilize that power for a Handbrake conversion).

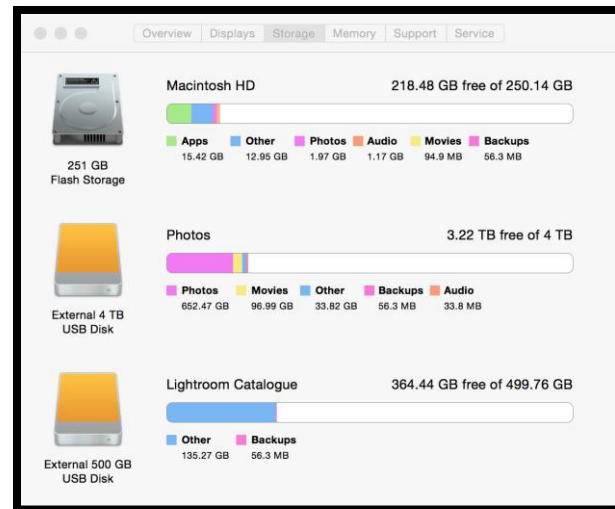
This minimalist approach to software keeps the storage needs to around 32 GB, leaving 218 GB free on the 256 GB SSD. If I had my choice though, I would have preferred and I would have gladly paid extra for the 512 GB SSD. However, refurbished units are sold as is, with no customization available and I've yet to see a quad core unit configured with the 512 GB SSD in the Canadian Apple store. Apple does not offer the PCIe SSDs for sale separate from the Mac Pro – not that you would want to pay the Apple premium even if Apple did offer them.

## 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

I prefer the 512 GB size so that my Lightroom catalog can be stored on the same SSD for maximum performance. At the time of transition from PC to Mac, my Lightroom catalog was over 200 GB and that just would not work with a small 256 GB drive. I have since trimmed the catalog size down considerably to about 135 GB, as I took the opportunity to trash many thousands of photos I did not need anymore (most from the hockey photo folders).

While 135 GB certainly fits on the 256 GB internal SSD, I prefer not to clutter up the internal drive. A small drive also makes for faster backups via SuperDuper. For storing my active Lightroom catalog, I use a 500 GB SSD in an external, bus-powered, USB 3 case from Vantec. This drive does nothing except store the catalog, so there is plenty of capacity available.



With a small drive forcing me to be disciplined with how I store my files, I could not continue to work with the slow USB 2 external drives I had accumulated over the years. With the old PC, I had two internal, 3 TB storage drives, and that was quite fine, as I used one for photos and the other for everything else. I backed the data across multiple external drives, with 2 Drobo arrays and four other drives of varying capacity.

I bought the Drobos quite some time ago, when they were popular flavor of the month devices and many glowing reviews came forth. Unfortunately, very few of those reviews spoke the truth about the Drobo's speed, which is abysmal through USB 2 and barely any better through Firewire 800. There were times when I had large backups that were measured in days(!) for completion of transfer. I never experienced a drive failure with the two Drobos, but I shudder to think how long it would take to rebuild the data if I did experience a failure.

My other external drives are primarily dual-bay, Vantec USB 2 cases, but I have some single-drive cases too. After removing all the hard drives from the old PC and all the external drives and taking stock of the spares in the desk drawer, I found myself with some two dozen 3.5-inch hard drives, ranging from 74 GB Raptors to 3 TB Seagates, 11 of which were 1 TB units. There must be a way to repurpose all those drives with decent performance on the new Mac Pro...

After some research time, viewing YouTube reviews and poring over how little I had left in the wallet, I bought two RAID boxes from my local computer parts shop; one from Vantec and one from Mediasonic.

## 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

---



*From left to right, the Mac Pro, Vantec RAID 5, Mediasonic RAID 50, Vantec USB 3 drive for the Lightroom catalog*

The Mediasonic ProRAID is a USB 3, 8-bay box, which is the easy way to use up 8 of those 1 TB drives. This box is setup as a RAID 50, which is a RAID 0 made up of two, 4-drive RAID 5 arrays. The RAID 50 using eight 1 TB drives means actual capacity of only 4 TB. This is my primary storage drive where I keep all my current files. It also serves as my Time Machine backup drive.

The best feature of the Mediasonic box is that it goes to sleep when the Mac Pro is turned off or is disconnected from the computer, and awakes when the computer is on. It's plug-and-play and leave alone except when a drive fails, for which I have three spares immediately available. You can adjust the fan speed manually or leave it on auto mode. It's not silent, but it's nowhere near as loud as my old PC, so it's definitely an improvement in noise.

The Vantec HX4R is a 4-bay, USB 3 box, configured as a RAID 5. It has two 2 TB and two 3 TB drives installed for 10 TB of actual capacity, but the RAID 5 array only sees 8 TB and then only offers 6 TB of actual storage. This box is my archive storage, which is a backup of the data on the Mediasonic array, as well as storing everything else I have. I only connect this box to the Mac Pro when doing a backup. The Vantec also has an adjustable fan to control air flow and noise. Similar to the Mac Pro, the Vantec is round at the front and has a top-mounted fan unit that expels hot air.

What I need now is an app that will do incremental backups, like Time Machine, so only new files are copied over to the archive box. Maybe Carbon Copy cloner, but I need to do more

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

research to find an app as good as what I used to use with the PC, where I could do targeted, folder level comparisons between source and backup drives and then have only the new files copied over.

I no longer use the Drobo, but I decided to continue using the older Vantec cases as additional backup drives. For those keeping count, here is how the four USB 3 ports are used on the Mac Pro:

- Mediasonic storage
- Lightroom catalog
- USB 3 hub from a 27-inch Dell monitor for peripherals such as the USB 3 Lexar card reader and other USB 3 devices, such as external hard drives
- USB 2 hub from the 30-inch Dell monitor for peripherals such as the mouse dongle, Epson 4800 printer and Wacom Bamboo tablet

With no spare USB 3 port, I have to disconnect one of the connections on the rare occasion I need to burn an optical disc. I use the optical drive removed from my old MBP (housed in an OWC case), but this drive requires the full power from one of the Mac Pro's USB 3 ports. Connecting it to the USB 3 hub of the 27-inch monitor does not provide enough power.

Having to use multiple storage drives is not as elegant as having everything inside one, large box. However, the rat's nest of cables is not any more than what I had before and now, my files are actually more secure thanks to being stored on two RAID boxes instead of a large, single drive (albeit, backed up multiple times).

### Monitors

Initially, the Mac Pro was connected to the same two LCD monitors I have been using for many years; a 30-inch Dell and a 24-inch Acer. It did not take long before I wondered about the need to upgrade one of the monitors, specifically, the Acer. The Acer is still fine for now, but some of the OSD buttons are acting up and for some time now, I've been concerned about having to ramp up the contrast too high when calibrating and profiling this monitor (generally, as an LCD ages, you will have to ramp up the brightness and contrast when calibrating).

One of Apple's big marketing messages with the new Mac Pro is 4K video editing capability, which logically entails being able to connect 4k resolution monitors. I think you can guess where this is leading...

Yes, I bought a 4K monitor, the already mentioned 27-inch Dell, even though I have no intention of editing 4K videos. What I bought is not one of the desired Ultra Sharp models and certainly not one of the very expensive 32-inch models. Instead, a no frills, utilitarian, and cost-effective choice in the Dell P2715Q. I admit, I did not fully understand the ramifications of running a 4K resolution monitor with one issue that came to bear only under usage with Adobe software.



## 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

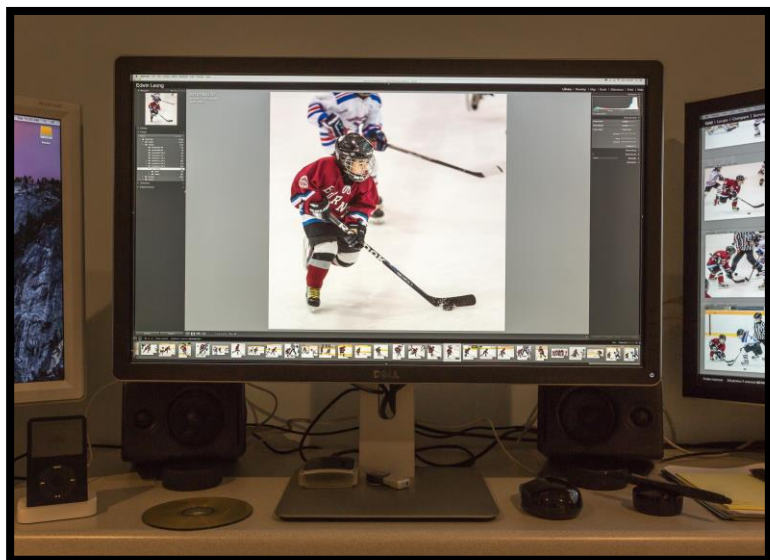
---

I'm sure everyone knows about Apple's Retina resolution found in iPhones, iPads, MacBook Pros and now, iMacs. Super high resolution that makes text crisper and easier to read and beautiful rendering of images. I never looked into how Retina resolution actually worked (the pixel-doubling), I just enjoyed the better quality from my iPhone and iPad.

However, let's consider the 15-inch MBP with Retina resolution of 2880x1800 pixels. That is an astounding resolution for such a small screen; more than my 30-inch monitor can display (2560x1600). However, the user does not actually see a desktop at that resolution. If the user did, all the icons and text would be so small, as to be useless. What the user actually sees is an "effective" desktop of 1440x900 pixels, but all the text and icons are smooth and the eye can no longer discern the pixels thanks to the pixel-doubling and density of the pixel pitch. I know I've grossly simplified the concept, but I bring it up to highlight my ignorance and expectations from the 4K Dell monitor.

In Mac OS, there is a scaling feature for high-resolution monitors. There is also a "Best" setting, which does the same pixel-doubling as with the Retina MBP to give an "effective" desktop of 1920x1080 with the 27-inch Dell. Now, I'm at an age where I am starting to experience presbyopia, the increasing of the minimum focusing distance of the eyes, resulting in less ability to read small print. However, I'm nowhere near needing to run the 27-inch Dell at 1920x1080 to make text larger and more readable. *Incidentally, the 5K Retina iMac does not actually give you that kind of usable resolution; the 5K is a pixel-doubled figure so the default "effective" desktop view is like that of a non-Retina iMac at 2560x1440 pixels. Just try and imagine what 5120x2880 looks like on a 27-inch monitor – without a massive amount of zooming, even an eagle will go blind trying to read anything at that pixel pitch.*

Going through the different scaling options, there is one setting that seems to be the best balance between readability and resolution (offering just over 3000 horizontal pixels). However, I decided to run the monitor at maximum 4K resolution, as my eyes can still handle the small pixel pitch. This results in an expansive desktop that is addictive once you get used to it, but before settling down to work, during the first week of use and trial and error of using the different scaling options, I encountered some glitches.



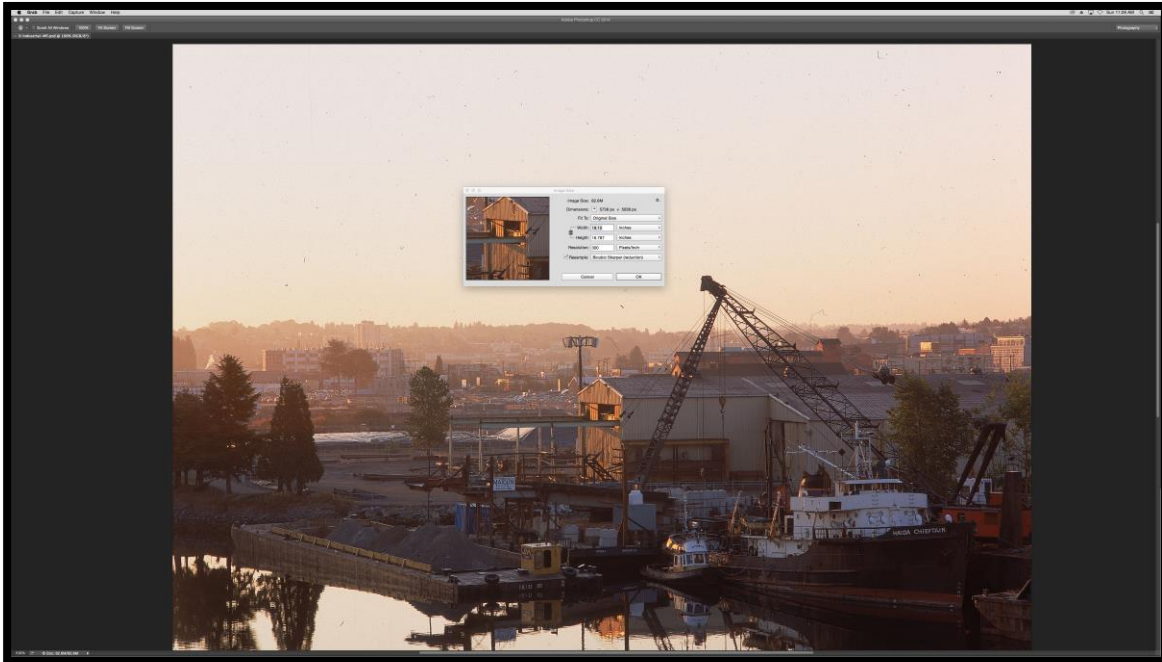
## 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

---

There were times when working in Lightroom and viewing an image at 1:1 ratio, or in Photoshop at 100%, the scaling was completely off. At 1:1 or at 100%, the entire image was shown on the 4K monitor, which simply cannot be when you consider that all the images I work with nowadays are in the 20 MP range. The key is that 1:1 or 100% view means one pixel from the file is mapped to one pixel on the monitor.

The Canon 5D3 offers resolution of 5760x3840 while the Canon 6D and Canon 7D2 offer identical 5472x3648 resolution. The horizontal resolution is significantly more than the Dell P2715Q's horizontal resolution of 3840 pixels (3840x2160). So, how on earth can a full resolution file from any of the three cameras I currently use, fit into the space of a 4K monitor when viewing at 1:1 or 100%? I think this bug was unleashed when I was changing the scaling resolution on the fly in the OS and it takes several reboots to make the bug dormant again. Thus far, I think only Lloyd Chambers has been regularly reporting on this issue and even as technically proficient as Lloyd is, even he is not sure if the issue originates with Apple or with Adobe.



*This screenshot from Photoshop CC 2014 shows an image (scanned from medium format film) with a resolution of 5736x5036 pixels. The image is at 100%, but that is simply impossible with a monitor resolution of 3840x2160.*

# 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

---



*This screenshot from Lightroom shows an uncropped image taken with the Canon 7D2.  
This is at 1:1, which is the same view as "Fit" due to the scaling bug.*

*The screenshot below shows the same file with proper scaling at 1:1. I moved the image to the right so the left edge is at the same boundary as the screenshot to show how much more of the frame is still available to the right of my son. The left and right Lightroom panels have been hidden so the visible image is edge-to-edge.*



## 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

---

Due to some other changes in my current computing needs, the 24-inch Acer is now used with a second Mac system and the 30-inch monitor is now the secondary monitor in my system. Because the Acer is the smallest and most flexible of my three monitors, it occasionally sees duty with my work laptop thanks to its RGB input – yes, my not-very-old work laptop still uses a port that's been around since my earliest days of PC usage.

I had planned on buying another 4K monitor to replace the 30-inch Dell, but came to my senses when I asked myself, why? Why do I need another 4K monitor when the 30-inch monitor is still working just fine, and, it's not a bad thing having a secondary monitor with a larger pixel pitch than a 27-inch monitor running at 4K resolution.

### Setup

Not much to say here, as I use peripherals already at hand prior to buying the Mac Pro.

A wireless Microsoft keyboard and mouse along with the Wacom Bamboo tablet. Behind the monitor is a set of AudioEngine A2 powered speakers fed by an old iPod and by the Mac Pro's audio output.

With all the cables running around, the Mac Pro looks like a Borg from *Star Trek, the Next Generation*. I have the Mac Pro's rear side turned to face outward for easy access to the power button. Same as with the old PC, I only fire up the Mac Pro for editing sessions and try to minimize any online activity to just updates from Apple and Adobe.

I do get a bit tired of swapping the Wacom Bamboo tablet between two systems, so I am mulling over buying a Wacom Intuos Pro tablet dedicated to the Mac Pro system.

### Performance

I have no comparison times or specs to share, just my subjective observations.

In using the Mac Pro for non-photo editing, I did not detect anything indicating superior performance was at hand. Surfing the web with Safari or using any of the other mundane apps that come installed with OSX felt little different than using my now ancient 2009 17-inch MBP, or for that matter, the 2007 PC. I wondered if I had spent \$3,000 wisely; however, once I had Photoshop and Lightroom installed and I set about doing real photo editing, I was delighted with the marked increase in performance when used with the old 24-inch and 30-inch monitors.





## 2015 Computer Upgrades

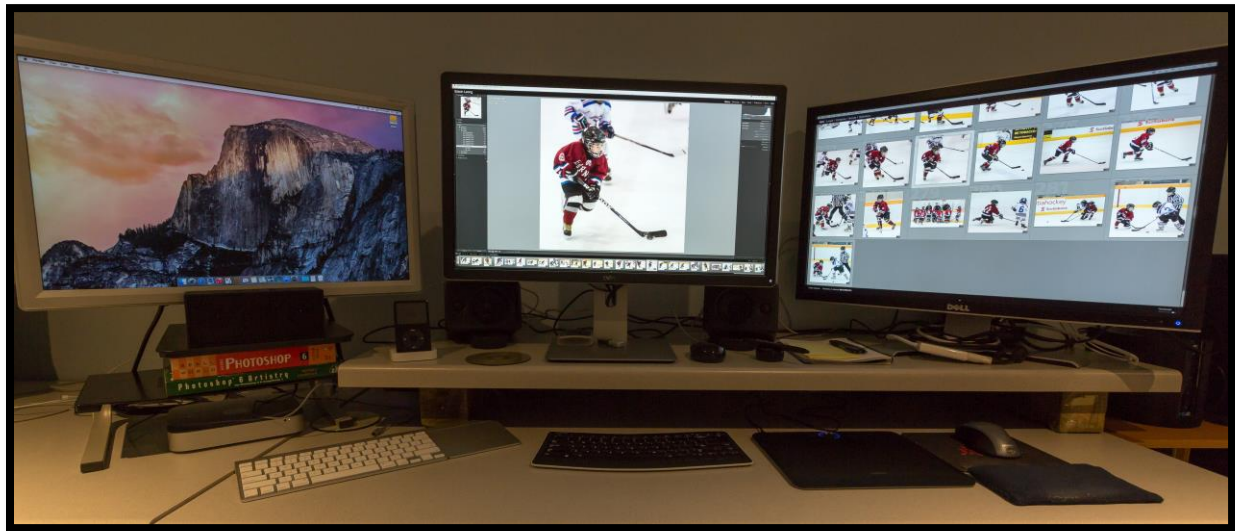
*by Edwin Leong, aka, CameraHobby*

---

In Lightroom, anything I clicked on or adjusted sliders, or cropped, was instant; no lag or latency whatsoever. Editing hundreds of photos was quick and efficient. I was also astounded with the Mac Pro's quietness. Where it sits on my desktop, behind my monitors, I hear nothing from it. Prior to buying and installing the Mediasonic RAID box, I was using a Seagate external drive as my main storage and while not loud, the Seagate's typical hard drive spin is louder than the Mac Pro. Silence is golden and immediately addictive!

Installing the 4K Dell monitor changed the performance equation though. While still fast doing normal editing in Lightroom, the crop function is decidedly laggard when running the monitor at full 4K resolution. The spinning beach ball shows itself more than I'd like whenever I crop, which is almost always for hockey photos, owing to the longer distances from where I usually photograph from.

Doing some research into the problem found a reference to Lightroom not being optimized for 4K resolution and the way it renders images during the editing process. Switching Lightroom from the 4K monitor to the old 30-inch monitor gets me the performance back, but then what's the point of having a 4K monitor if you don't use it at its native resolution? Scaling down the resolution in OSX also helps with performance, but again, what's the point? Thankfully, the performance hit is so far, only with the crop function and I can live with that relative to all the other performance benefits from the Mac Pro.



*Excuse the distortion from the wide angle lens used to take this photo, which makes the two outside monitors appear to be ultra wide aspect ratio.*

### **Machead?**

While the old PC is still around for now, ingloriously hidden under a table, it is no longer in use. This marks the first time since I was in my very early 20s that I am not using a PC – I had a brief six-month period between computers when I was in my third year of university. In 2008, I bought my first Apple computer, a 13-inch MB, which was later swapped for a 2009 17-inch MBP that I still use now (after a few hard drive and RAM upgrades).

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

While there is nothing wrong with the 17-inch MBP as an everyday computer, its size and weight don't lend itself to portable use. I've used it on and off as a desktop replacement by connecting an external monitor, keyboard and mouse, but that becomes inconvenient if I want to use it as a music server with my hi-fi system.

The 17-inch MBP is also my current Windows PC, so it's better being an unencumbered laptop. I removed the optical drive, installed an OWC bracket to allow installing a second SSD and then installed Windows 8.1 on that second drive. Installing Windows on a 2009 vintage MBP is not straightforward because Apple removed Bootcamp support for older Macs to install Windows 8. However, where there is a will, there is a way and Windows 8.1 runs nicely on my old MBP (that's not to say I like Windows 8 all that much though). Running a dual-SSD MBP is very nice not only for performance, but also for silent operation.

I wanted another everyday computer to run beside the Mac Pro system, one that I could surf the Internet, check emails, type out articles; all the things that I don't do with the Mac Pro and tend not to do with the MBP. Admittedly, however, most of my online consumption is via the iPad.

I had to force myself to keep the budget in check and not buy more than I need – yes, a quad core iMac would be very nice, but very unnecessary for what I want out of an everyday computer. Plus, I already had all the peripherals, such as wireless keyboard, mouse and monitor. A Mac Mini would be just fine to serve this role.

There were only three things I wanted for the specs:

1. Better than the entry level i5 at 1.4 GHz clock speed – I don't need much from an everyday computer but 1.4 GHz is ridiculous
2. At least 8 GB of RAM – even though OSX is considered pretty efficient, nowadays, I think 8 GB is the minimum needed for everyday usage
3. A SSD drive, because of better reliability than a spinning hard drive

The previous generation Mac Mini is a favorite amongst Mac users, because you can easily upgrade the RAM and with a little technical know-how (or an OWC tutorial video) you can get at the innards and upgrade the hard drive. The 2012 and older Mac Mini even allowed installing a second hard drive thanks to an extra SATA connection on the logic board. Lastly, you could configure the 2012 Mac Mini with quad core i7 CPU. Unfortunately, Apple did away with all that with the 2014 refresh of the Mac Mini.

The RAM is now soldered and while the hard drive can still be swapped out, it requires tools that are more specialized with more user time and effort. In addition, there is no longer a second SATA connector and no option for a quad core CPU. Thus, if buying a 2014 Mac Mini, you need to configure it the way you want right away as there is no upgrade path.

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

Mac Minis tend to be rare like hen's teeth on the refurbished store, so when I saw one configured the way I wanted in early February 2015, I immediately ordered one. It's a current 2014 model with a 2.6 GHz i5 CPU, Intel Iris graphics, 8 GB of RAM and a 256 GB SSD.

As with the Mac Pro, because I only installed the apps I need, the storage used is pretty small (about 55 GB used so far). As the main iTunes sync computer for all our iPads and iPhones, I need to have a music library available. I store those music files on a small, external SSD drive. I learned not to do backups of the iPads to this computer too, because all those backups can use up a lot of hard drive space.



I recently bought a 128 GB iPad Air (not the Air 2) and loaded it up with a large music library and many of the Luminous Landscape video journals and tutorials I purchased over the years, along with a few other movie files. Of the 114 GB of actual storage available, I used up 105 GB, which was initially backed up to the Mac Mini.

To my astonishment, when I was checking the status of the Mac Mini, I couldn't understand how more than half of the Mac Mini's storage capacity was gone just like that. After figuring out it was all the backup files for the iOS devices, I deleted the backup files and regained the capacity back again.

The Mac Mini drives the 24-inch Acer monitor and I'm using a wireless Mac keyboard along with the wireless Mac Touchpad, a Wacom Bamboo tablet shared with the Mac Pro, and a wireless Microsoft mouse. To bypass the Mini's bad internal speaker, I use a Toshiba Bluetooth speaker, but due to irregular connection issues, I often have to use this speaker hardwired to the Mini's headphone jack.

Although, I don't have Microsoft Office installed on the Mac Pro or Mini, I am still using Word to type up this article on the Mini (and occasionally, on the iPad Air). How you ask?

Microsoft OneDrive, which is required to use Word on the iPad, allows me to store my articles in the Cloud and access the files on any device with a browser and an internet connection. I did some editing and writing on the Mini using Word Online through the Safari browser.

## 2015 Computer Upgrades

*by Edwin Leong, aka, CameraHobby*

---

I didn't realize the flexibility and ease of use of OneDrive until after going through the hassle of installing Windows 8 and Office on the old MBP. If I had then I might have eschewed having a Windows install at all. However, after some use typing up this article, I realize that Word Online is not a replacement for Word installed on the computer.

Placement of pictures is something that is very limited with Word Online, whereas the "real" Word makes picture placement easy. For example, I cannot place any of the smaller images used in this article in line with text with Word Online. For final edits of this article, I had to do the work on the Windows 8.1 install on the MBP, which has the full Office suite installed. That said, I still like what OneDrive offers by being able to save the file to the cloud.

I also have the Windows install for one application that I still want to use, which is not available for Mac; ProShow Gold for creating slideshows. I've no doubt that there is something available for Mac, but ProShow Gold is such a fantastic application that I'm loathe to lose use of just yet.

Any other issues with the transition to Apple hardware and Mac OS? Yes, and some are quite irksome:

- While the Apple wireless keyboard looks great and has function keys integrated with the computer and software, it's a piece of ergonomic crap for prolonged typing sessions, such as editing this article. For my hands and wrists, the angle is wrong and I'm thinking I'm going to have go back to an ergonomic keyboard from Microsoft.
- Apple dumped support for old PowerPC software a few years ago, which means that my expensive color management kit from X-Rite is now useless unless I spend a lot of money to buy new software. Thanks X-Rite, for dumping support of legacy GretagMacbeth hardware.

My cheapskate solution is to use X-Rite's ColorMunki Photo to calibrate and profile my monitors (disclosure: the ColorMunki Photo is a review sample from my CameraHobby days that I tried to return after reviewing it, but the marketing company that sent it to me, refused to take it back). I'm long passed the days when I was OCD about color management and since I'm not promiscuous with the papers I print on, I don't need to create new printer profiles, as all my old profiles are still usable whether on Mac or PC.

- Every time I fire up the Mac Pro and use Lightroom, I have to create a new folder on my Mediasonic drive and then delete that folder before I start reviewing photos and deleting the bad files. If I don't create and then delete the temp folder, the Trash Bin does not work properly with the Mediasonic or any other external drive. This leads to wasted time having to go through an extra step to delete files in Lightroom, whereas doing the create/delete process allows normal deletion of files. This is not a Lightroom bug and has nothing to do with the Mediasonic, other than it being an external drive. This appears to be bug within Mac OSX.



## 2015 Computer Upgrades

by Edwin Leong, aka, CameraHobby

---

- One of the things I dreaded diving into with the Mac is printing. After years of being used to the rather unintuitive hand off between Photoshop and Lightroom to Epson's printer driver, looking cursorily at the Mac printing process would leave me confused. However, this quickly passed as I embarked on my first large printing project with the Mac Pro.

My youngest son's hockey team had a team photo taken and a 10x36 inch sized banner poster file was created. The coaches wanted a poster for every player, but who knew enough about printing to take care of the job? Oh, hey, how about Edwin, who always seems to have a camera at the games. Could I take the file to a pro print shop and get a dozen posters made? Um, well, I'll see what I can do.

At home, I imported the file into Lightroom for some basic edits and then exported to Photoshop for finishing edits and printing with the Epson 4800. For this project, I bought a roll of Epson Premium Luster paper, 16-inches wide and 100 feet long - the first time I've ever bought a roll for printing, but the only way to print three-foot long prints through the 4800.

After figuring out how to setup the 4800 for roll printing, I printed a dozen posters, leaving a two-inch border around the image area (allowing me to dispense with the notion of having to cut down the 16-inch paper width). Another parent took the posters and had a print house mount the poster onto foam core board.

Although I tried to donate my cost to the team, the team manager insisted on paying me something, so I only charged for the about 50 feet of paper used and not for any of the ink (so much wasted firing up and cleaning the 4800 after many months of non-use).

Thus far and still early in my life as an all-Mac user, I'm satisfied with the transition.

*My thanks to Oleg for posting this article and allowing me an outlet for writing about my ongoing experiences as a photographer! You can contact me by email at, camerahobby at gmail dot com*