

For 2016, we've been on-again, off-again with what our basic machine would be (okay, it's that way every year, but we want to give the campers the best computer we can make). We're still waiting on our Microsoft Windows 10 donation. But we've zoomed in on the basics and look like we are all set for the summer build season.

### **NEW**

**The motherboard:** We'll be using a brand new [Intel Desktop Board Media Series LGA 1155 DDR 1333 Micro-ATX Form Factor \(BOXDH67BLB3\)](#) motherboard that can accommodate the LGA 1155 socket CPU. The motherboard supports two back panel USB 3.0 and the 6 Gb/s SATA drive connections, so that is great. It also has four 240 DDR3 RAM slots that can accommodate up to 32GBs of 1333 RAM.

**Memory:** While the motherboard can handle 32 GBs of RAM, our budgets can't. So we'll be installing the [Kingston HyperX FURY 8GB Kit \(2x4GB\) 1600MHz DDR3 CL10 DIMM memory modules](#). This should get everyone started really well and still leave you with two open memory slots for upgrading in the future. While these are able to run to 1600MHz, note that the motherboard only supports 1333MHz, so will be running at this slower speed. We chose the 1600MHz as it was the same price and allows you to keep it should you upgrade the motherboard in the future.

**Hard drive:** We went with a hybrid mix on this. So all machines will have a new [Silicon Power S55 120 GB Solid State Drive](#). We'll use these for the operating system and other key programs, then re-use the hard disk drives that came with the machines we're scavenging.

**Windows Operating System:** At the moment we are anticipating the [Microsoft Windows 10](#) donation from Microsoft. But sometimes the wheels at the big companies can move slowly. As of 6/15 we are still waiting on this donation, but it has been re-affirmed four times in the past month and they said we'll have it by 6/17.

**WiFi Dongle:** All campers will be going home with a [Edimax EW-7811Un 150Mbps 11n Wi-Fi USB Adapter](#). The last two years we loaned them but had to collect at the end of the week. The prices on these keep coming down, so we just included this for 2016. It isn't the world's best, but those cost over \$100. \*or equivalent. It also doesn't make sense to go with a really expensive WiFi adapter if your connection to the Internet isn't more than 50 Mbps (so the weak link in most home networks is the connection to the outside world, not the network in the home).

**Graphics Card:** Since we were able to reuse the CPU this year, we're including a brand new [Radeon R7 360 graphics card with 2GB of GDDR5 memory](#). This blows the doors off the last 2 years in terms of 3D graphics rendering and should do well for most of your games. Currently ranked 93rd best card (out of thousands). Max Resolution: ANALOG: 2048 x 1536; DIGITAL: 2560 x 1600 (DVI); 4096 x 2160 (HDMI; DP). I ran some tests and the frame rate was great with a single monitor running mid-range resolution. Didn't test it on the higher resolutions because I don't have monitors that support that.

### ***Mostly Reused***

**Case and Power Supply:** We were able to get used cases donated from Husson University and these cases are better than anything we could afford. They don't look as cool but are much better cases. All of the power supplies are standard ATX power supplies and easily upgraded. The power supply units will all be at least 350 watts and we'll have some spares in case any show signs of not working.

**The CPU:** Is a used/donated *i5-2400 quad core 3.1 GHz LGA 1155 Socket CPU, with integrated graphics*. This CPU has an average CPU benchmark of 5800. Last year's AMD Quad Core had a CPU benchmark of around 5200, so we're moved up a bit this year. This CPU brand new still costs \$250, so good deal there.

**Monitor:** Are all used. These are a mixture of mostly 17" LCD screens. They all work and will serve well. But can be upgraded easily if desired.

### ***Possible Upgrades (not needed, but nice):***

**More memory:** When a computer loads programs, they reside in RAM (random access memory) and this operates many times faster than pulling that information off of a drive. If you don't have enough RAM, then the computer has to keep juggling what is kept in RAM and what is kept on the drive. If your use of RAM exceeds about 60% of the available memory, you should consider getting more memory. All memory in a computer operates at the slowest speed available, so if you put "really fast" memory in with "really slow" memory, you're still going to have really slow memory. There are 4 available slots on the motherboard; we'll be filling two slots with 4GB memory modules. You can use the recycled memory from the old computer to increase memory, but we aren't sure of the speed on those memory modules, but it would add at least another 2 or 4 GBs of memory. If you want something different: 240 pin DDR3 memory with at least a 1333 speed. The most the computer will hold is 32 gigabytes, so 4 slots x 8 GB = 32 GB.

**Better Monitor:** Monitors can cost from about \$150 to \$1000, depending on size; display resolution; refresh rate (games work better with higher refresh rates); and some have built in sound. If you don't like the monitor we supply, check out the local big box stores for better graphics. The graphics card supports DVI-D; DVI-I, HDMI, and DP (Display Port) outputs, so any monitor that can connect to one of those will work.

**WiFi Adapters:** They currently make wireless adapters that will work at greater than 1gigabit/second data transfer rates. But don't be fooled, unless you are trying to connect to another computer in your network (like a sibling in the next room) you are not going to benefit by a faster card. Why? Because most of the limit is with the Internet connection you have with your Internet Provider. If the most you can upload/download is 30 Mbps (million bits per second) than it doesn't do you any good to send it out at 1 gbps (billion bits per second).

**Keyboards and Mice:** We are supplying fairly basic wireless keyboard and mice. Because this is the one part of your computer that you interact with the most, it will likely be what you want to tailor to your own likes/dislikes. Go to a store and check out a variety and see what "fits".

**Speakers and Headsets:** The computers do not come with speakers, so any speakers will be better than none.

### **PassMark Performance Benchmark Results (on one we built here in the office, results may vary)**

These numbers are for reference, if you want to check <http://www.cpubenchmark.net/> you can see how some of the different components rank compared to others.

Computer:	2546 (very good)
CPU:	6147 (very good)
2D Graphics:	639 (good)
3D Graphics:	3172 (very good)
Memory:	2136 (very good)
Disk:	894 (low, but not tested with the SSD)

When we ran 3D tests on this build, the frame rate at HD video settings were excellent. NOTE: the graphics card can support up to 3 displays and results were on 1 display set to a low high resolution setting (no not a contradiction in terms, but not 4xHD setting, which our used monitors won't support but the graphics card will support).