

\$1200 Gaming PC – February 2018



*pictures for illustration purposes only

Welcome to the EasyPCBuilder \$1200 USD Value Gaming PC Build Guide & Master Course!

This gaming computer will deliver you the most effective combination of components for your money spent. It is an enormously capable computer, which will provide you the means to enjoy the latest games at Ultra or high resolution, undertaking all modern day games with ease.

The combination of parts suggested brings this computer to the best value vs performance for the components that are currently available on the market. This combination of components has been tried and tested many times over and has been proven as a very high performance gaming computer which allows you to both overclock, and upgrade to two graphics cards in the future if you wish.

Included in the guide are Amazon direct links for our recommended parts, to enable you easier part searching and ordering.

Happy Building!

Brett - EasyPCBuilder.com



Central Processing Unit

[AMD Ryzen 5 1600X CPU](#)

So the time has finally come where the AMD 'Ryzen' has risen to beat the current Intel offering of CPU's for performance vs cost! Previously we have recommended the [Intel Core i5 7600K Kaby Lake CPU](#) however the recent release of the AMD Ryzen chips has proved to beat the Intel Kaby lake and Coffee Lake processors in both speed and price for gaming and general desktop / Operating System applications.

The CPU that we recommend is the [AMD Ryzen 5 1600X CPU](#). There are several other Ryzen processors in the '5' range from 1400,1500 & 1600 both in 'X' and 'non-X' variants. We have recommended the 1600X due to its higher clock speed, and greater core count, offering higher processing speeds overall. The 1600 non 'X' variant has a base clock speed of 3.2GHz and a max overclocked speed of 3.6GHz, while the 'X' variant having a base speed of 3.6GHz and a max overclocked speed of 4GHz.

Both the 'X' and 'non-X' variants have the ability to overclock out of the box, however the 'X' variant has higher power and control refinements, enabling it to reach higher speeds easier than the max speeds of the 'Non-X' variants.

The Ryzen CPU has a particular pin type (or Socket compatibility) which is AM4 (or PGA 1331 meaning it has 1331 processor contact points). This socket type is important to ensure your motherboard chosen is compatible with this CPU socket type.

Due to most people who overclock (or use performance CPU variants) choosing to purchase aftermarket CPU coolers which are larger and more efficient, AMD have opted to not include a stock heatsink and fan with their CPU package. Intel also follows this mode of thought. We have our recommendations below for the AMD CPU.

At present the 1600X is the top of the Ryzen 5 consumer class, until moving in to the Ryzen 7 range of processors. For the role of a Gaming PC, where the primary task is not absolutely CPU dependent, the additional cost of upgrading to the Ryzen 7 (with its additional cores/threads) will not gain you any noticeable gain in performance in your graphics intensive gaming tasks as your Graphics card bears most of this load.

The Ryzen 1600X is an immensely capable all round CPU and will support your gaming requirements with ease. Your additional dollars for a gaming PC are better spent on your graphics card, SSD and RAM to gain additional performance, and we have specified the PC in this way in this guide for you.

Note if you are strictly on a budget, the Ryzen 5 1600 (Non X) is the slightly slower CPU but does include a CPU cooler with it. The \$30 CPU saving and then \$60 additional saved not purchasing an aftermarket CPU cooler may be worth the savings (If your budget was \$1400 for example), or if you were to spend this on an upgraded or higher level graphics card such as a higher specified 1070 or 1080.

The AMD vs Intel debate

Until recently (and for the past several years), the Intel i5 range of processors (KabyLake) held the top spot for performance vs value in the gaming computer CPU segment.

Several years ago, the two manufacturers of these microprocessors offered a very equivalent product, where if you could get a slightly better deal on price, we would have recommended either. The issue at the moment, is that the comparable Intel CPU's (Namely the i5 8400 (cheaper) cannot compare to the AMD Ryzen 1600X in terms of gaming performance. This is not now due to how games utilise the cores on the CPU (which used to be the case in the older revision of AMD CPU), but how the overall speed of the new Ryzen processor offers greater single core performance.

Until recently, it seemed that AMD was focussed on the lower power, embedded chip market (tablets, smart phones etc), which is a hugely popular market which Intel is currently trying to come up to speed with (which can be seen with their new Kaby Lake & Coffee Lake smaller transistor technology (14nm compared to 22nm).

Due to AMD developing and releasing their new Ryzen CPU focussing on the desktop performance applications, it has recently knocked Intel off the top perch for a computer of this type. Intel will develop a new type of CPU in the next few years, where the newer technologies may then again surpass each other – time will tell!



Motherboard

[MSI Gaming B350 Tomahawk ATX motherboard](#)

Or (if above not in stock)

[MSI Gaming B350 PC Mate ATX board](#)

The socket type which interfaces to the AMD Ryzen CPU is called AM4 or called PGA 1331.

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The item that has the most impact on the performance of this board will be the chipset installed on it. The chipset controls how the various components interface with each other on the board and the effective speed that these items can communicate at. Choosing an effective chipset will enable you to obtain the best speed and management of resources of your devices connected to the board.

The chipsets best utilised for gaming PC's is the AMD B350 and x370 chipsets. They enable multiple channel RAM access at high frequencies, fast access to other installed components such as sound cards (PCI-Express) but the most important differentiator for these chipsets is that they allow fast, high number parallel data management of data for the Graphics Card (GPU) of the PC, which is where a gaming PC will be doing most of its processing – in rendering for the game.

The B350 and x370 offer very similar features with respect to the ability to overclock, the ram channels and speed available, fast access to SSD's, integrated LAN, Serial ATA ports for hard drives, HD audio and USB support. The main differentiator with the x370, is that it provides multiple graphic card configurations higher bandwidth (of PCI-Express 3.0 standard) to be used on the PC.

For example, the B350 allows for either one graphics card to be connected to the graphics communication bus (utilising all 16 parallel communication lanes, same as the x370) or with the x370 chipset you can utilise two graphics card which each share these parallel communication lines, utilising 8 each.

This enables you to run two individual graphics card processors in a configuration known as Nvidia's SLI (scan line interleaved), which has been shown to increase graphics performance. This allows you at a later timeframe, to add an additional graphics card if you find your graphics performance lagging (this would be years down the track – the graphics card recommended today is great!).

For the purposes of this build, we recommend the the B350 chipset as we are only using 1x high speed graphics card, will be interfacing an NVMe drive (explained in more detail later) and we also have the ability to easily overclock the CPU to gain the additional processor speed. There is also ability to overclock the RAM and GPU with this particular motherboard.

The board that I have recommended ([MSI Gaming B350 Tomahawk ATX board](#)) is a real standout board at present, featuring all the best basics, and a multitude of expansion, which provides substantial graphics, RAM and Hard Drive expansion where you wish for it.

This motherboard will allow you to expand your RAM to 64GB (4x more than recommended) and run up to four hard drives, or five solid state drives at the latest 6GB/s (and greater) transfer rates and has a high quality sound chip on board, supporting clearer audio outputs. Even without utilising these additional features of the board, it still provides the basic gaming PC requirements best at this price point, allowing you to run your CPU, Graphics Card and RAM at in the most optimised configuration available - these additions are also helpful to aide expandability down the line.

Another recommended board, with very similar functions is the [MSI Gaming B350 PC Mate ATX board](#) which is a comparable board in nearly every aspect, however is more stealthy than the Tomahawk board as mentioned above (no red LED's, coloured heatsinks etc) if you are looking to save a few dollars and prefer the stealthier look we recommend highly this board.

The MSI boards recommended is from an excellent hardware manufacturer, with high customer satisfaction and a range of great products out at present.

Note: Most motherboards do not have Wi-Fi on board. If you require Wi-Fi we would suggest a [standalone PCI-E network card](#) (Any PCI-Express card in the \$20 range will suit well).

Also, the board sizes (their 'form factor) recommended are both of the ATX size. You may see other boards which are Micro ATX also with the same B350 chipset. We have recommended the ATX (larger) sized boards for this gaming PC as it will suit the case size well, and as we are building a high performance Gaming PC, the additional expandability offered by the number of expansion and interface slots are highly likely to be utilised by your additional wifi, sound and other card additions in the future.

End of preview :) – Download the full guide which has it all!