**Selecting the best Motherboard for Gaming**

If you're planning to customize your own PC or thinking of buying a used PC with the intention of upgrading it later, there's one essential component that might either limit or allow you to increase your current setup or specs. The motherboard, often known as the system board, is an important hardware component. Consider your computer as a jigsaw puzzle, with the motherboard as a key component. The size, kind, and compatibility of your motherboard determine how many and which types of other hardware components you may utilise in your system, most notably the CPU that you'll employ. One of the most important factors to consider when choosing a system board is the compatibility of your CPU with your motherboard.

After you've decided on a CPU, the next component you'll need for your next gaming setup is usually a suitable motherboard. This article aims to provide you with a more comprehensive understanding of motherboards, including their kinds, compatibility, and features.

**Motherboard – Introduction**

A motherboard, also known as a system board, is a printed circuit board (PCB) that acts as a harbour for a variety of hardware components, allowing them to function and interact with one another while also providing connectivity interfaces for all components such as the CPU, GPU, memory, and storage modules. All modern desktop and laptop PCs include motherboards to connect all of the main hardware components, but the only ones you'll likely buy for your gaming setup are those designed for desktop computers.

From the top down, the system board has a collection of circuits, transistors, capacitors, diodes, batteries, expansion slots, and connections. It's a complex component, and many of the technical details and specifications are outside the scope of this how-to. Some of these characteristics and features are vital because they have a substantial influence on your selection, which you will learn more about as you continue reading.

Before you make your final selection on the best motherboard for you, be sure it meets your current and future requirements (in case you want to upgrade or add more components). If your existing motherboard doesn't have enough room or support for the components you want to use in your gaming setup, you may upgrade to a system board that has everything you need to have the best gaming experience possible. To future-proof your PC, be sure your system board can handle your changing requirements as you expand your hardware wish list.

**Choosing between AMD and Intel**

Choosing the correct CPU for your upgrade drive is a precondition for the remainder of the procedure, and it's a difficult to choose impartially between two classic competitors, Intel (The Blue Team) and AMD (The Red Team) (The Red Team). Both chip makers offer cutting-edge CPUs that range from entry-level models to high-end, power-hungry beasts that deliver outstanding performance in high-end games at high screen resolutions and frames per second.

Both the Red and Blue teams are continually producing high-quality items in order to keep the rivalry alive by putting each other to the test. For the time being, Intel's 11th-generation CPUs are available, while AMD's Zen 3 architecture is available in its 4th-generation Ryzen 5000 CPU portfolio. The best option for you is determined by your specific requirements. AMD's Ryzen CPUs, for example, may be visual candy if you want to play high-end games with many cores. On the other hand, if you require the fastest single-core performance, Intel's Core CPUs will suffice. Check out our full article on "How to Choose the Correct CPU for Gaming" for additional information on selecting the right CPU for your next gaming setup.

Once you've selected which CPU is ideal for you, you'll need to choose a system board with the correct socket and chipset for your CPU, since a CPU socket is an interface via which a CPU may be installed on your system board.

**CPU Socket and Compatibility**

The table below can help you figure out which plugs are crucial and which ones are compatible:

|  |  |
| --- | --- |
| **Socket** | **Supported CPUs** |
| **LGA 1200** | 10th & 11th Generation Intel Core |
| **LGA 1151** | 8th & 9th Generation Intel Core |
| **LGA 2066** | Skylake-X/Kaby-Lake X |
| **sTRX4** | 3rd-Generation AMD Ryzen Threadripper |
| **sTR4** | AMD Ryzen Threadripper |
| **AM4** | AMD Ryzen, 7th Generation A-Series, and Athlon |

It's critical to know which motherboard has the correct chipset and socket for the CPU you'll be using.

Let's move on to another crucial feature, the motherboard's form size, to see how much room your system board gives for extra hardware components like RAM strips and GPUs.

**Form Factor of the Motherboard**

Motherboards come in a variety of sizes (known as form factors) to provide you some choice when it comes to your surroundings, scalability, and requirements. If you have ample desk space, a full-size tower case is advised, but if you want a home theatre PC, you'll need to pick the smaller casing to fit in the restricted area under your television screen.

The form factor dictates not just the size of the motherboard, but also the amount of hardware components that a motherboard may handle. The greater the physical size of the motherboard, the more power and components it can support. When selecting a casing, keep in mind that not all cases support all form factors.

The table below lists the most well-known and often used form factors, as well as their most important specifications:

|  |  |  |  |
| --- | --- | --- | --- |
| **Form** | **Mini-ITX** | **MicroATX** | **ATX** |
| **Size** | 9.0 x 7.5 Inches | 9.6 x 9.6 Inches | 12 x 9.6 Inches |
| **Expansion Slots** | 1 | 4 | 7 |
| **RAM** | DIMM | DIMM | DIMM |
| **RAM Slots** | 2 | Up to 4 | Up to 8 |
| **GPUs** | Up to 1 | Up to 3 | Up to 4 |
| **SATA Ports** | Up to 6 | Up to 8 | Up to 12 |

Apart from the aforementioned form factors, there are a number of others, but for the purpose of simplicity, we've just included the most common ones. The size of the PC you want to construct or buy is the most crucial aspect to consider since it affects your system board's capacity to house and power a particular number of hardware components. Choose cautiously to ensure that your motherboard meets both your present and future requirements.

**Expansion Slots for Motherboard**

As previously stated, system boards hold not just a CPU but also a number of hardware components such as GPUs, memory, and storage units. Over the history of a motherboard, there has always been a huge variety of expansion ports, but thankfully, things have grown much easier. You'll almost probably be using PCIe (Peripheral Component Interconnect Express) connectors now, with some boards also including PCI slots for outdated gear.

The PCIe interface is the most important since it allows you to connect most hardware components to the motherboard. On system boards that are compatible with the newest Ryzen and Intel Comet or Tiger Lake CPUs, there are four distinct versions of PCIe slots, including the newer-generation PCIe 3.0 and PCIe 4.0 ports. All of these variations have various connections and port sizes, so be sure you have the right number of expansion slots and the right sizes to meet all of your current and future hardware needs.

The most frequent slot sizes are x4, x8, and x16. There are four slot sizes: x1, x4, x8, and x16. Manufacturers of system boards provide a variety of products based on the number of slots and where they are located. It is advised that you have enough slots with adequate room around them to accommodate all of your essential accessories if you are planning to buy several RAM chips and hefty GPUs with massive cooling systems.

**Compatibility with GPU**

A GPU is one of the most glamorised and important hardware components for gamers, as it has a big effect on how information is shown on the screen in a visual format, which has a huge impact on the gaming experience. It's critical to be sure your system board can handle the GPU you're planning to buy for your long-awaited gaming PC.

Some Intel CPUs include integrated or onboard GPUs on the same chip, and they perform well in games like CS:GO and Grand Theft Auto: San Andreas. Similarly, AMD has its own version of integrated GPUs on the same chip as the CPU, which they name the accelerated processing unit (APU).

It is recommended to utilise an external GPU module for high-end gaming and content creation jobs like as 4K video editing. As a result, it's a good idea to double-check the board's compatibility with the GPUs you're planning to buy, as well as how many graphic adapters your motherboard can support at once.

PCIe 3.0 or PCIe 4.0 slots are used by modern GPUs. The width available surrounding each PCIe slot, as well as the size of your GPU, are important factors to consider. Most GPUs take up two PCIe slots and make one of them inaccessible, preventing it from being utilised for another connection. If you wish to use NVIDIA's "Scalable Link Interface" or AMD's Crossfire to deploy two or more GPUs, you'll need two independent and accessible PCIe slots.

To guarantee that everything adjusts smoothly, verify your GPU specs to see whether they are compatible with the motherboard you intend to purchase.

**Memory Modules and their Interoperability**

Most modern PCs utilise RAM strips with at least 4GB of capacity that are DDR4 or later. The amount of RAM you need for your PC is determined by the games you intend to play. For entry-level games, 8GB of RAM is suggested, while 32GB or more is advised for those who wish to play high-end games with high resolution and high-performance settings.

RAM strips connect to a system board directly. The RAM modules we use today are referred to as dual in-line memory modules (DIMM). The number of DIMM RAMs you'll use and the DDR variation you'll use are determined by the number of RAM slots on your motherboard, which typically range from two to eight (Check the Form Factor Table above for details). You can only install one RAM module at a time, however if you need a lot of memory, such as 16GB or more, utilising separate DIMMs can save you money. For example, 32GB of RAM on a single strip is substantially more expensive than two strips of 16GB each.

RAM quantities range from 1GB to 128GB, with 64GB and above costing significantly more and being used mostly in servers. Before you choose a motherboard, be sure it has enough slots and supports the type of DDR DIMM you want to utilise.

**Storage Interface**

Hard disc drives (HDDs) and solid-state drives (SSDs) are essential components of your computer. When the PC is turned down, the operating system and all apps, as well as your data, are stored on HDDs and SSDs. With so many storage options, such as HDDs and SSDs, picking the right one can be difficult. In a word, an HDD - Hard Disk Drive - is a drive with spinning platters and a read/write head that can store massive quantities of data but is slower than its SSD equivalent. Solid State Drives (SSDs) use NAND flash memory to store data and are quicker and more durable than hard disc drives (HDDs) owing to the lack of mechanical components. However, SSDs have less storage space than HDDs.

Another distinction is that HDDs, being an older technology, are less expensive than SSDs, which have a greater price per GB as storage capacity increases.

Before finishing your system board, you should be aware of various storage interfaces and standards in order to avoid any compatibility concerns. It comprises both the types of connectors and the number of connections you'll need to expand or add storage to your system.

Serial ATA is the most widely used storage interface currently (SATA). SATA's third variation, SATA 3.0, allows for read/write speeds of up to 600 megabytes per second (600MB/s) for SATA SSDs, but is substantially slower for HDDs at 150MB/s.

Because motherboards can feature more than one SATA port, you can buy both HDDs (for storing large data) and SDDs (for housing OS and high-end apps or games for quicker performance). SATA 3.0 variants with slightly modified connecting interfaces, such as SATA 3.2 for M.2 form factor SSDs, offer high-performance in terms of speeds.

NVM Express, or NVMe, is a popular storage connection type that uses the PCIe bus to connect SSDs to your motherboard. This is a modern protocol with more bandwidth, reduced power usage, and shorter latency, among other benefits. Data transfer speeds of over 2GB/s are now possible with common NVMe SSDs. NVMe SSDs come in two sizes: cards that fit straight into PCIe slots and smaller versions that fit into M.2 connectors. These SSDs are typically seen in laptop computers.

**Smaller SSDs and Bulkier HDDs**

The correct storage, like many of the other components in this how-to, depends on a variety of criteria. One frequent strategy is to purchase a compact SSD for the operating system and programmes, which provides much improved speed, and then bigger HDDs for storing huge amounts of data such as images and video.

Whatever storage you pick, ensure sure your motherboard is capable of meeting your demands today and in the future. This necessitates a thorough examination of a motherboard's characteristics to verify that it can connect all of the storage you may demand in the future. Keep in mind that you may connect external storage devices if necessary, which is a must for data that you must take with you.

**Conclusive Thoughts**

You'll want to think about the manufacturer of the motherboard you'll need to build up your unique PC, or the motherboard that should serve as the basis of that pre-built PC you'll be picking up. Some firms specialise on gaming motherboards with plenty of room for adding GPUs and LED lighting, while others concentrate on more mainstream PCs.

ASUS, Gigabyte, MSI, and ASRock are some of the most well-known motherboard makers. On Newegg's Motherboard page, you can see the many alternatives from those firms, as well as others.

If you're looking for the greatest GPU Motherboard, go to [Subserve.co.uk](https://subserve.co.uk/) to place your order.