

Why is it necessary to use DisplayPort for gaming?

Most people connect their TV or monitor using an HDMI cable. And while this is a great standard for watching movies or general office work, what if you're using the most advanced gaming technology?

If you have a powerful RTX 4090 GPU driving a 4K 240Hz gaming monitor, then an HDMI cable will get in your way. So, these are the reasons why you need to use DisplayPort (DP) if you want to maximize your gaming rig.

1. DisplayPort enables up to 4K 240Hz playback



High FPS is essential for gamers. That's why you can buy 4K monitors with refresh rates set at 165Hz or higher. However, to enjoy this feature, you need a GPU that at least supports DisplayPort 2.0.

That's because HDMI 2.1, the newest HDMI standard, can only transmit up to 48 Gbit/s. That means it will only let you game at up to 4K 144Hz. On the other hand, DisplayPort 2.0 and later have a maximum limit of 80 Gbit/s.

While HDMI allows you to game in 4K, it is limited to 144Hz. But if you choose DisplayPort, you can play 4K games at a maximum refresh rate of 240Hz. With this massive increase in frame rate, you'll have an advantage over other players in games like Counter-Strike: Global Offensive, Valorant, and many other competitive titles.

2. Mid-range and higher GPUs have more DisplayPort ports



While many people are happy with one monitor, using multiple monitors gives you an advantage as a gamer. Not only do you get a wider field of view, allowing you to see more, but you can also use your additional displays to display a variety of other applications, such as streaming controls if you're a game streamer or game guide if you are playing a new game.

So if you look at the ports of almost any mid-range or higher GPU, you can see that they usually only have one HDMI port and a few DisplayPort ports. That means it's easier to grab multiple monitors and plug them in directly using the included DisplayPort cable instead of buying a DisplayPort to HDMI adapter.

3. DisplayPort supports MST



But what if you have a gaming laptop instead of a gaming desktop? Before USB-C became popular, most mid-range and top-end gaming laptops only had one HDMI port and one Mini DisplayPort.

So, what do you do if you want to connect multiple monitors to your gaming laptop? Luckily, you can run two or more displays from a single DisplayPort via multithreaded transport, or MST. This technology allows you to connect 3 or more displays into one DisplayPort, so you don't need multiple DisplayPorts on your device.

You don't need to plug other monitors directly into your computer if they support MST. Instead, you can attach one display to the other via MST. DisplayPort first introduced daisy-chaining with DisplayPort 1.2, which was limited to 21.6Gbit/s or one 4K 60Hz display or four Full HD 60Hz displays.

Since DisplayPort 2.0 currently has an 80Gbit/s limit, you can theoretically mount up to 16 Full HD displays at 60Hz. And with the development of DisplayPort over USB-C, laptops that do not have DisplayPort but use USB-C with DisplayPort alt mode can also enjoy this technology.

4. DisplayPort UHBR makes choosing the right cable easier



Another reason you should choose DisplayPort as a gamer is that it's easier to choose a cable that complies with this standard. You must ensure that your cable is compatible with high resolution and refresh rate displays running HDMI 2.1.

The problem is that there is no easy way to identify the correct type of cable. However, if you are using DisplayPort, you will never encounter this problem. That's because DisplayPort UHBR simplifies the DP standard. Instead of having to deal with multiple unlabeled cables, DisplayPort forces UHBR cables to display their speed capacity.

So when you go cable shopping or search through your cable collection, you can immediately spot the right DisplayPort cable that will carry the 4K 240Hz signal your gaming PC provides. You won't have to go through the trouble of troubleshooting a malfunctioning 4K display only to find out the cause is an incompatible cable.

5. You can easily convert DisplayPort to HDMI



DisplayPort and HDMI are two different standards with two different signal architectures. Therefore, you cannot just use a passive DisplayPort to HDMI converter unless your computer uses Dual-Mode Display Port.

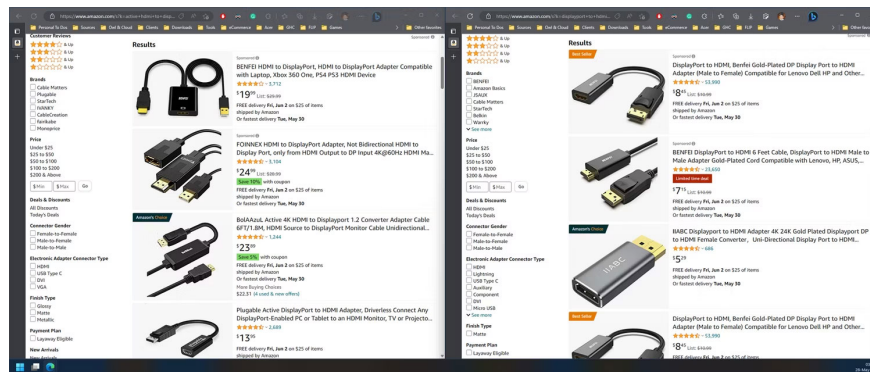
If your computer has the DP++ symbol on it, it means your computer's DisplayPort can detect when an HDMI display is attached to that computer via a passive adapter. If so, the port will automatically convert its output to something HDMI understands.

However, if your computer lacks this feature, you must use a DisplayPort to HDMI active cable. Although this type of cable is more expensive, it is still widely available.

Another advantage of DisplayPort over HDMI is that you can split it into two or three different HDMI signals. You can buy a DisplayPort to HDMI MST hub, which connects multiple displays to one DisplayPort. This is useful if you already have HDMI for a secondary display. With a hub, you don't need an expensive new DisplayPort monitor just to enjoy a multi-monitor setup.

But whether you have an active or passive DisplayPort to HDMI cable, you cannot use it to convert the HDMI signal to a DisplayPort display.

6. HDMI to DisplayPort converters are more expensive



As said before, HDMI and DisplayPort signals are not compatible. Although DisplayPort has the technology to convert its signal directly to HDMI, HDMI does not have this feature. So, if your computer only has DisplayPorts available and you need to plug in an HDMI display, you must use an HDMI to DisplayPort active adapter.

This adapter will convert the HDMI signal to DisplayPort outside your computer. However, because it requires its own electrical circuit, the adapter cable usually has a large box mounted on the wire, containing the adapter. And in some cases, it requires external power via USB, making it a hassle to use.

Because of these additions, HDMI-to-DisplayPort adapters cost more than DisplayPort-to-HDMI adapters. Most DisplayPort-to-HDMI adapters typically cost under \$10, while HDMI-to-DisplayPort adapters typically start at \$15.

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