

What is eGPU? Criteria to know when choosing an eGPU

If you want to improve your laptop's performance, you can refer to eGPU models and criteria for choosing a suitable eGPU here!

eGPU is a powerful support tool that helps improve laptop performance and is recommended by technology experts today. Whether you own a high-end or low-cost device, the eGPU will enhance your usage experience. Join TipsMake to immediately learn about the concept of what an eGPU is, special features as well as criteria you need to know to choose the most suitable eGPU through the article shared below.

What is eGPU?

eGPU (External Graphics Processing Unit) is a discrete graphics processor (separate VGA), which means a discrete graphics card. Just from the name, we can imagine that this device will be separate from the outside and must use a connection port to connect to the laptop.

In addition to eGPU, in GPU we also have iGPU - integrated GPU or integrated GPU and dGPU - dedicated GPU (discrete GPU). Unlike eGPU, iGPU and dGPU will be located inside the computer.

Picture 1 of What is eGPU? Criteria to know when choosing an eGPU

In the past, when the GPU was placed inside a laptop, it caused many problems, including taking up a lot of space, poor heat dissipation, and especially the machine's performance not reaching its maximum level. Intel has recognized that and worked hard on ideas and research to produce eGPU after many years. And that is also the reason why eGPU is on the market today.

eGPU is considered a new innovation that contributes to improving and enhancing the graphics processing performance of laptops without hardware intervention. At the same time, eGPU was also popular because of its ability to minimize battery drain and device overheating that were common at that time.

What is the structure and operating principle of eGPU?

eGPU is made up of the following parts:

1. VGA graphics card from AMD or Nvidia (can have 1 or more VGA).
2. Circuit board.
3. Cable.
4. Power supply (power supply needs to be compatible with VGA capacity).
5. Radiator (may or may not be included).

6. Some other spare parts.

Picture 2 of What is eGPU? Criteria to know when choosing an eGPU

eGPU operates according to the following principle : After you plug the eGPU into the computer, install the driver and restart the computer. At this point, your laptop will automatically convert the default graphics processing tasks available on the device to the graphics card connected to the eGPU. From there, the laptop will perform better with significantly increased performance without causing the device to overheat or drain the battery.

Several ports connect the eGPU to the laptop

Below are some ports connecting the eGPU to a laptop that you can refer to.

mPCIe

mPCIe is considered the most popular and popular protocol currently. Most users will think of and use mPCIe when needed. However, this protocol is inconvenient in that it takes up a lot of time during installation.

To use mPCIe, users must remove the laptop case to remove the wifi card inside and then plug in the eGPU connection cable. In addition, lines such as HP EliteBook, Dell Latitude or Lenovo Thinkpad belong to the Whitelist category with wifi ports that only accept genuine cards.

Picture 3 of What is eGPU? Criteria to know when choosing an eGPU

Express Card 34, 54

Express Card 34 and 35 are considered the most convenient and optimal way to connect an eGPU to a laptop today. With this protocol, you just need to plug the eGPU into that port on the body of the device to complete the connection step. Thus, instead of removing the cover like mPCIe, the connection steps will be much more convenient.

However, Express Card 34 and 35 only support connection to workstations or business machines (machines already equipped with Express Card 34 or 35).

M.2 (NGFF)

Laptops equipped with Intel Core i chips from the fourth generation or higher will be compatible with the M.2 connection port. This protocol is quite similar to mPCIe, which means you need to remove the case to connect the eGPU. However, M.2 outperforms mPCIe in terms of bandwidth by a much larger amount.

Picture 4 of What is eGPU? Criteria to know when choosing an eGPU

Thunderbolt 2, 3

Thunderbolt has a very large amount of bandwidth, so most users prefer this connection port. Newer laptops, especially HP, LG, and Macbook brands, almost all support connecting to eGPU via Thunderbolt port.

Thunderbolt makes connecting to an eGPU incredibly simple and easy, thereby improving performance with less impact on your device. However, laptops that support Thunderbolt ports are currently quite expensive

Advantages and disadvantages of eGPU

From the above basic information, TipsMake will help you have a more objective view of eGPU through the advantages and disadvantages summarized here.

Advantage

eGPU brings many benefits to your laptop, which is also the outstanding advantage that this product possesses. Detail:

1. Diverse types of connection ports along with the eGPU setup process are not too complicated.
2. Can be compatible with many different devices.
3. Compared to PCs, eGPUs are more flexible. At the same time, this product offers the ability to easily move anywhere while still ensuring powerful graphics processing performance.
4. Minimize laptop overheating or battery drain.

Picture 5 of What is eGPU? Criteria to know when choosing an eGPU

Defect

1. Some connection ports and models require removing the case to connect to the eGPU. Therefore, only those who have knowledge and understanding of computers can do it themselves. If not, you need to get support from a professional.
2. Although a variety of laptop models are supported, not all laptop models allow the installation of an eGPU.
3. With laptops with too low a configuration, it will be difficult to achieve maximum functionality and not be able to take advantage of the power that this device brings.
4. The price is still quite high, some lines have to use separate screens if the computer screen is not enough to meet minimum requirements such as scanning frequency, resolution.
5. During movement, if not careful and careful, it is likely that damage will occur due to force.

Picture 6 of What is eGPU? Criteria to know when choosing an eGPU

Instructions for connecting eGPU to laptop

Below are the steps to connect the eGPU to a laptop that you can refer to.

For eGPU devices, remove the case

For eGPU devices that need to remove the case, follow these steps:

1. **Step 1:** You need to delete the old graphics driver settings that were previously on your laptop to start connecting the eGPU.
2. **Step 2:** Turn off the computer then completely unplug the power source. Next, use a screwdriver to remove the back cover of the laptop.
3. **Step 3:** At the compatible drive, insert the card into the PCIe slot with the lightest force possible. If you don't know whether the card is in place or not, listen for the sound. When there is a sound, you have completed this step.
4. **Step 4:** Reinstall the laptop cover. After turning on the power and successfully installing the driver, you can start the computer to run the new graphics driver. At this point, the laptop has received the card and you can use it as usual.

Picture 7 of What is eGPU? Criteria to know when choosing an eGPU

Note: If you are not confident with your computer skills and knowledge, please seek help from someone with more expertise to avoid unnecessary damage.

For eGPU devices, there is no need to remove the case

For eGPU devices that do not require a case, connection will become much simpler and easier to do. You just need to plug the eGPU directly through the available connection wires into the laptop. Then, the laptop will turn off the available GPU to make room for the newly connected eGPU to operate.

Some criteria for selecting eGPU

How to choose the right eGPU for your needs and usage? Please consider some important criteria below to choose the most optimal product.

1. Usage needs

No matter what equipment or product you are looking to buy, you must base it on your needs to make the most suitable choice. Determine whether you want to buy an eGPU for what purpose, whether it is to support graphics processing, 3D drawing or entertainment gaming, then identify the type of eGPU with integrated graphics card. is reasonable.

The reason comes from the fact that there are some applications that are only suitable for certain groups of graphics cards. Therefore, buying the right product not only helps you perform necessary tasks with the highest performance, but it also saves you maximum costs.

Picture 8 of What is eGPU? Criteria to know when choosing an eGPU

2. Connection port

The connection port is also an important factor. Because each type of device will be compatible with one or several different connection ports, you need to identify which port your device is compatible with and consider before choosing.

3. Price

You need to combine two factors to make the best choice when buying an eGPU, including your usage needs along with the budget you can spend on investing in this product. The price of the eGPU will depend on the connection port and quality, please consider carefully to make the most suitable decision.

Picture 9 of What is eGPU? Criteria to know when choosing an eGPU

4. Brand, place of purchase

Choosing a reputable brand and place to buy also plays an important role in owning a quality product. Because the price of eGPU on the market today is not cheap, buying the wrong low-quality product will cause you to lose money unfairly.

Some popular types of eGPUs

If you are still wondering which type of eGPU is good to buy, you can refer to the popular and popular eGPU models suggested by TipsMake here.

1. GDC Beast EXP

EXP GDC Beast is a type of eGPU that is quite commonly used today. This brand comes from China and is compatible with the following connection ports:

1. mPCIe.
2. Express Card 34, 35.
3. M.2 or NGFF.

This product stands out because of its reasonable price and support for most popular connection ports today.

Picture 10 of What is eGPU? Criteria to know when choosing an eGPU

2. PE4C

PE4C supports connection to laptop devices via most popular protocols today, including: mPCIe, Express Card 34, 35 and M.2 (NGFF). This product belongs to a brand from Taiwan. Overall, PE4C possesses quite similar features when compared to the EXP GDC Beast introduced above.

Picture 11 of What is eGPU? Criteria to know when choosing an eGPU

3. Akitio Node

The next suggestion that TipsMake wants to send to you is Akitio Node, a high-end product that is compatible with today's leading Thunderbolt port. That's why the transmission bandwidth of this eGPU line will be faster, giving higher productivity.

Picture 12 of What is eGPU? Criteria to know when choosing an eGPU

4. Gigabyte AORUS

Gigabyte AORUS is probably no longer a strange name for technology enthusiasts. This is a large manufacturer, specializing in producing famous laptops, graphics cards or motherboards in the world. Therefore, you can rest assured when buying Gigabyte products, specifically the eGPU line from this brand.

In particular, the Gigabyte AORUS eGPU is also equipped with the company's most powerful Nvidia Geforce GTX 1070 graphics card today.

Picture 13 of What is eGPU? Criteria to know when choosing an eGPU

5. Alienware Graphics Amplifier

The last eGPU line that TipsMake wants to introduce to everyone is the Alienware Graphics Amplifier - a product from the popular laptop manufacturer Dell today. However, Alienware Graphics Amplifier only supports Dell's Alienware gaming machines.

In addition, this eGPU line is only compatible with PCIe ports, meaning you have to remove the case to install it.

Picture 14 of What is eGPU? Criteria to know when choosing an eGPU

Epilogue

It can be said that eGPU will be an indispensable tool for those who are looking for a solution to improve graphics processing performance without affecting the laptop and eliminating overheating and battery drain. . If you are not satisfied with your laptop's old graphics driver, immediately find a suitable eGPU. Thank you for reading the article.

You finished reading the article "**What is eGPU? Criteria to know when choosing an eGPU**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.