

# Select network device hardware

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**Small home or office networks make it easier to print and share files and Internet phone calls.** However, choosing the right products is an issue to consider. In this article we will introduce you to the best choice for your budget.

For businesses and families with computer enthusiasts, networking is a very common thing. Computers are not unique in every home and small office they need to be connected to: Today, printers, Voice-over-IP (VoIP) phones, game consoles, media centers and other devices require an Internet connection. So why not make them shared by a broadband connection?

## Panorama

A network will allow you to connect multiple computers and other devices together so they can share resources such as printers, files or Internet connections. There are three main types of networks for home networks: ethernet networks - networks using ethernet cables, power-line networks - networks using existing wires and available sockets on the wall (currently not yet available in Vietnam but still mentioned in the article for further reference) and wireless (Wi-Fi) network - using radio frequency.

Wireless home network gives you more convenience for wired networks because there is no need to install cables, notebook computer users can access the network comfortably. However, wired networks are often more secure and reliable (especially for media data streams). Depending on your requirements on the location and mobility of network devices, you might consider combining the components of the wired and wireless network together; It will be relatively easy if you plan ahead for this combination.

## Wi-Fi standards

Networks based on IEEE 802.11 standards for wireless ethernet are often referred to as Wi-Fi networks.



Wi-Fi has several advantages. The most common and newest advantages are based on a 2 (draft 2) design scheme of the 802.11n standard. They are one of the fastest wireless products currently offered, with the fastest theoretical speeds of up to 300GBps; Their coverage is also better than networks based on previous standards such as 802.11a, b, and g.

Unlike previous Wi-Fi standards, 802.11n covers operations on two different bands: 2.4 GHz and 5 GHz. Most products only operate on the 2.4-GHz band and are backward compatible with products based on the previous 2.4-GHz Wi-Fi standards, 802.11g and 802.11b. However, some 802.11n products also recently support 5-GHz band and are backward compatible with 802.11a products (using 5-GHz band). We will introduce you to the advantages of such dual-band products later.

The alliance will certify 802.11n products for each of these frequencies; Different brands' products will be able to work at high speeds on certified frequencies.

### **Design-N (Draft-N) and Money-N (Pre-N)**

The good range and speed of 802.11n comes partly in the use of multi-path radio and antenna technology, the first problems that occurred a few years ago in products (labeled 'money - n 'or "pre-n") are based on a company's Airgo Networks chips. Previous products were severely disrupted; so you should avoid, they are compatible with 2.4-GHz-n (draft-n) products only at the speed of older 802.11g products. One way to ensure that you buy the most current technology is to find the alliance certification for 802.11n.

### **Older and slower standards**

Because the price of design-n devices is declining markedly, we do not recommend purchasing products using the old 802.11 2.4-GHz standard (802.11g and 802.11b). The 802.11g standard has a theoretical throughput of 54MBps and 802.11b of 11 MBps.

You can also see that 802.11g devices are promising to offer speeds up to 108 mbps, but such products use proprietary technology and you won't be able to achieve those speeds if used in conjunction with other 802.11g products from other vendors.

Note that if all you share on your network is broadband Internet access, it may not be possible to see how effective it is because most cable and DSL connections only reach 6mbps. . However, Wi-Fi connections never

reach their theoretical maximum speed, even 802.11g Wi-Fi networks can keep up with the fastest broadband.

Products with 802.11a also support theoretical maximum speeds of up to 54mbps, but have a lower bandwidth range than 802.11g products. Therefore, 802.11a cannot work with b / g products because it works on other radio bands (5GHz). 802.11a is also used primarily in some enterprise environments.

## **2.4 GHz and 5.4 GHz**

So why do some 802.11n Wi-Fi products support both the 2.4-GHz and 5-GHz bands? First of all, dual-band support needs to take into account all old Wi-Fi products. Although there are many older 2.4-GHz products, the 2.4-GHz band has many serious limitations and becomes increasingly difficult to solve: It has only 11 channels, and only three of the 11 channels are not stacked. (1, 6 and 11).

As 802.11b and g networks become more and more - along with other devices that use the 2.4-GHz band (such as Bluetooth - equipped for mobile phones and radio, microwave and some mobile phones). phone extension) - the overcrowding of the channel is increasing and gradually becomes a serious problem. If multiple users use the same 2.4-GHz channel, then this person will conflict with others who interrupt the service. Such interruptions may not recognize if you are downloading a file (your device will connect again); but they will show clearly if you are conducting a live conversation, or playing a game, or listening to music.

In contrast, the 5.4-GHz frequency band has a lot of channels that are not overlapping, and this is why they reduce interference. For that reason, it is being hoped to appear in the upcoming generation of consumer electronics connectivity enabling multimedia support. Investing in a dual-band router will allow you to 'add' such devices to your network while still supporting 2.4-GHz devices.

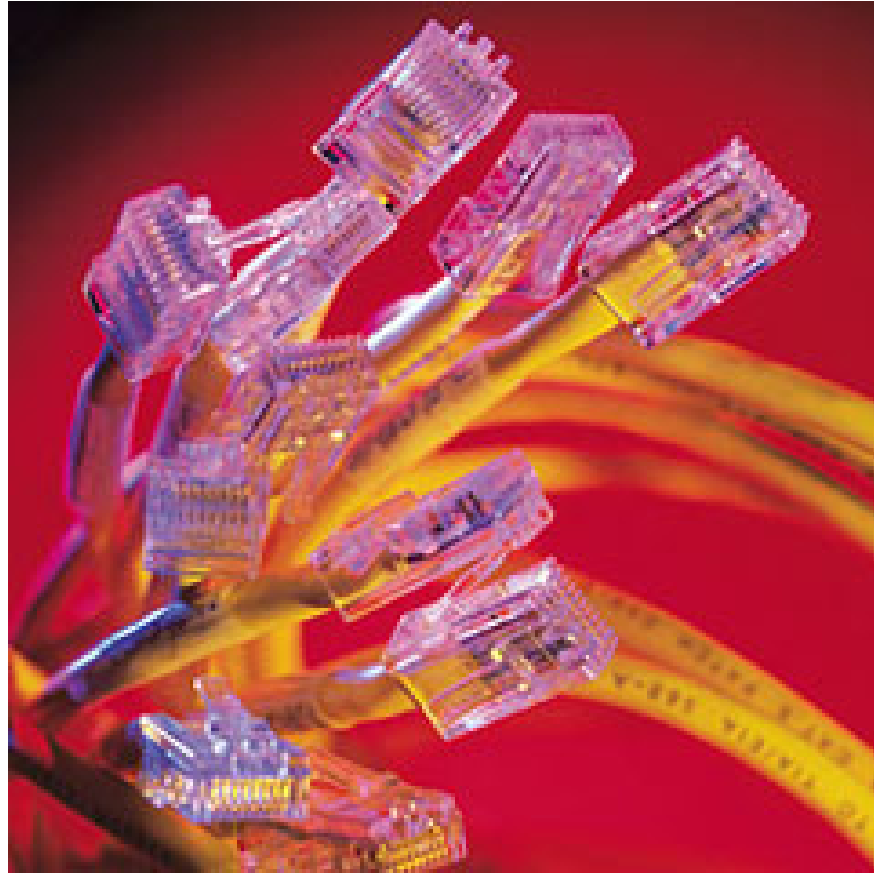
However, if you want to support network components to use both frequencies, buy a router that uses both bands simultaneously - some dual-mode routers can be configured to Only support for one frequency or another frequency. Apple's dual-mode router, for example, can support both 5-GHz and 2.4-GHz traffic; and it may be more suitable for people who have invested in 2.4-GHz draft-n routers and now want to support 5-GHz traffic.

## **Power-Line network**

Also a wired network, but with power-line technology, data transmitted on existing electrical lines in families is now becoming an attractive alternative technology for ethernet, the network requires cables. ethernet is expensive during the installation process.

HomePlug 1.1, HomePlug Powerline alliance, 14-mbps technology, provides speeds comparable to 802.11b Wi-Fi. But in the last 18 months, some of the faster technologies, such as HomePlug AV of the alliance, have surpassed it. With theoretical maximum throughput of up to 200 mbps and multimedia streaming optimization technology, HomePlug AV is clearly shown as a major competitor to 802.11n and is the best standard for streaming video and music. Online. Linksys and Zyxel are two US companies that have released HomePlug AV products; Belkin also hopes to launch these products in the autumn of this year.

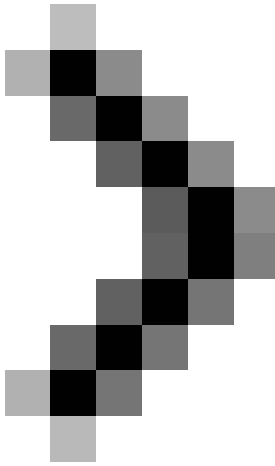
HomePlug AV itself also faces competition from other power-line technologies. One of them is Digital Home Standard, this is a 200-mbps technology introduced by a Spanish company and called DS2, which is promoted by the World Powerline Association (trade group that helps technology Power Line communication to distribute data services on grid lines. D-Link and Netgear are introducing products based on DS2 technology. Panasonic also introduced HD PLC adapters based on this genuine technology.



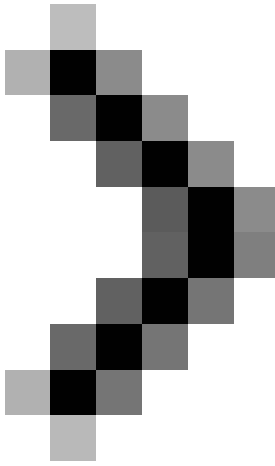
### **Ethernet options**

Ethernet still retains some of its gold standards for network connectivity due to its reliability and speed. However, it requires wiring between all network devices and installing Ethernet cables is also costly and sometimes aesthetically pleasing. Previously, 10/100-mbps ethernet was common, but in recent years more laptop computers have ethernet support of 1-gbps (1024-mbps or "gigabit").

Nowadays when you have to buy an adapter for your system, most of them support ethernet integration support.



**Select network device hardware (Part 2)**



**Select network device hardware (Part 3)**

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