

# Basic information about network equipment

In order to be able to use and connect networks to computers, we need dedicated network installation devices. Including 5 basic names including Repeater, Hub, Switch, Router and Gateway. Each device has different characteristics as well as ability to work.

Names like Switch, Router or Hub will definitely not be strange to those with little knowledge of technology. These are the necessary network devices so that we can connect the Internet connection to home and office computers, etc. And each of these devices has its own unique characteristics, playing roles. Different games in Internet signal transmission. In the following article, Network Administrator will provide you with the most basic concepts about the 5 most popular network devices, including Repeater, Hub, Switch, Router and Gateway.

## Basic information about network equipment

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### 1. What is a repeater?

In places with large spaces, signal transmission between hearing devices will often decrease. Those computers that are far away from the signal source will be weaker than those near them. Therefore, you need devices that can amplify the signal, so that you can transmit signals farther but stronger.



Repeater is a device in class 1 (Physical Layer) in OSI model. When we use Repeater, the physical signal at the input will be amplified, thereby providing a more stable and powerful signal for the output, to be able to reach further locations. If you want to ensure the transmission speed with large office areas, or use in telegrams, transmit fiber-optic information, . you should choose Repeater.

## 2. Concept of Hub:

The hub owns multiple ports from 4 up to 24 ports, and is considered as a multi-port Repeater. When information is transmitted to a hub port, other ports will receive information immediately.

There are currently 2 popular Hub types: Active Hub and Smart Hub:

1. **Active Hub** : This type of Hub is often used much more commonly, needs to be powered when operating. Active Hub is used to amplify the incoming signal and divide the remaining ports to ensure the necessary signal speed when using.
2. **Smart Hub** : also known as Intelligent Hub, it also functions similarly to Active Hub, but has an integrated chip that automatically detects errors on the network.



### 3. What is Bridge network device?

If the Repeater is the first layer in the OSI model, the Bridge is the second layer in this model (Data Link Layer). This tool is used to connect between two networks to form a large network, such as a bridge between two Ethernet networks.

When a computer transmits a signal to another computer with two completely different networks, Bridge copies the packet and sends it to the destination network.



Thus, although different network computers can still communicate to each other without knowing the appearance of the Bridge, because it works transparently. A Bridge can handle multiple network traffic as well as IP addresses at the same time. However, Bridge only connects networks of the same type and uses them for high-speed networks that will be harder if they are located far away from each other.

### 4. What is a switch?

Switch is considered as a multi-port Bridge. However, Bridge only has 2 working ports to connect to, the Switch can connect more depending on the port number on the Switch. This tool has two main functions: transferring data frames from source to destination, building Switch tables.



Switch is a network hardware device that allows communication between devices in a network, such as your local home network. Most routers in small businesses and households have integrated switches.

## **Other names of Switch**

Switches are more accurately referred to as Network Switches, although you rarely see this device called with such a name. A switch is also often referred to as a switching hub.

## **Important notes about switches**

1. Switches are found in both unmanaged and managed forms.
2. Unmanaged switches have no options and simply work immediately.
3. Managed switches have advanced options that can be configured. Managed switches also contain software, called firmware that needs to be updated, issued by the Switch manufacturer.
4. The switch only connects to other network devices via a network cable and therefore does not require drivers to operate in Windows or other operating systems.

## **Common Switch manufacturer**

There are many manufacturers of network equipment, of which the most popular switch manufacturers are: Cisco, Netgear, HP, and D-Link.

## **Description of Switch**

The switch connects different network devices, like computers, and allows those devices to communicate with each other. The switch has several network ports, sometimes up to dozens of ports, to connect multiple devices together.

Typically, a switch connects physically, through a network cable, to a router and then physically, again via a network cable, to network interface cards in any network device you have.

## **The main task of the switch**

Here are some common things you can do regarding managed Switches:

1. Change the password of the Switch
2. Update the firmware of the Switch

Switch performance is much higher than that of Repeater, which is also more active because it provides more functions like creating virtual LAN (VLAN).

## **5. What is a router?**

Routers are ranked in the third layer of the OSI model (Network Layer), which is responsible for connecting two or more IP networks together.

Routers connect different types of networks, from high-speed local Ethernet to low-speed long-distance telephone lines. But the router's working capability is slower than Bridge, because it is necessary to calculate the path for signal packets, especially when connecting to networks that are not at the same speed, the more work is required.



## 6. What is Gateway device?

Gateway connects two networks with different protocols, such as the network using IP protocol with the network using IPX, Novell, DECnet, SNA . With computers in networks using different protocols, it is easy. easy to connect with each other.

Gateway is capable of distinguishing protocols and applications when transferring email from one network to another, converting a remote session.



Refer to the following articles:

1. Learn basic functions of network devices
1. Learn the basics of file systems in Linux

## 1. 4 steps to troubleshoot audio loss in Windows

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