



# NETWORK SWITCH

What Is It & How You Can Use One?

Most people know that networking is vital for connecting different devices and computers together to connect online or with other devices. However, there are many ways to do this, and it's not always clear which method is best for a particular need. The only thing more frustrating than an ongoing network outage is a broken router or modem. However, with the right tools, you can keep your connectivity flowing smoothly.

The easiest way to troubleshoot router and network problems is to use a network switch. The device offers easy access to the router's settings and tools via an Ethernet connection. It's also a convenient way to add more devices for more bandwidth, should you need it.

In this eBook, I'll introduce you to network switches and show you how they'll make troubleshooting easier. Discover how a network switch can keep your business constantly connected.

*Disclaimer: I'm not an expert in the network switches. All the content in this eBook is based on my own understanding and research. If there are any errors that need to be corrected in this eBook, do let me know at [hello@alanmythoughts.com](mailto:hello@alanmythoughts.com).*

## What Is a Network Switch?

A network switch is a device that connects multiple computers to a network and allows them to share the bandwidth. The switch is an intelligent device that makes sure all the computers on the web can communicate with each other and share information. Network switches are used in both home offices and large businesses, which means each computer has access to the Internet and other computers within the network.

When you install a network, you can use different types of network switches. A switch is frequently used to transmit information between other servers, and it is different from a router in its function. It has various ports connected to devices such as computers or servers and allows the exchange of information between all connected devices simultaneously.

## How Does a Network Switch Work?

Network switches are used to connect computers and other devices. A network switch has several ports, which allow information to be transmitted between computers. The switch is connected to the Internet using a modem and router.

A network switch works like a hub in the sense that it can connect many devices by adding network ports. However, a switch connects each port to the other port on its hardware — and the connections are made automatically instead of using a hub. Thus, once a device is connected to a switch, all other ports on the switch are online as well.

A switch also creates and manages a separate collision domain for each connected device. As a result, each port on a switch operates independently from the rest of the network, preventing collisions from occurring between devices. When a device sends a packet to the other device, the switch agrees to transmit it.

A network switch is created to connect and control multiple computers or network peripherals. Sometimes, a switch can be combined with a router, which is known as a hybrid switch. The combination of these devices allows your home or office to maintain an internet connection and use it where needed.

## Why Do I Need a Network Switch?

Your company's network can be unreliable at times. In large businesses, the network switch is necessary for communication between computers. The switch takes care of different operations and makes sure that all network devices communicate appropriately. It can be helpful, especially if your router does not have enough Ethernet ports or is not functioning correctly.

## Network Switch – What Is It & How You Can Use One

A network switch allows you to expand the number of devices that you can connect to your network. It's a convenient way to connect new devices without having to purchase a new hub or wireless router. When connected to your router, the switch will automatically take care of all the data transfers between all ports and manage every connected device. This is something that would be impossible for you as a home user if this was not possible with a simple network switch.

This provides maximum bandwidth, which means faster file transfer speeds and better internet connection speeds. In addition, a network switch creates an environment that helps with essential activities such as high-speed downloading and seamless live streaming.

It also simplifies troubleshooting by allowing access to all settings from one location instead of many different locations like routers and hubs. The switch offers easy access to the router's settings and tools via an Ethernet connection. It's also a convenient way to add more devices for more bandwidth, should you need it. You can use a network switch in a typical office environment or for other business purposes.

# What Is the Difference Between a Switch and a Router?

Routers were initially designed to be used in large networks. Their primary purpose is that they are able to transmit information between different servers and computers, which are located in other buildings. Routers also have many ports that allow data to be transferred between devices. For example, a router can connect many printers and scanner devices together with its ports.

Network switches work differently than routers because they can connect and disconnect from the Internet at any time without affecting the other devices connected to it. If a device needs to use the Internet, it connects to the network switch because it is connected through Ethernet. Once the device is disconnected, data can still be transmitted in and out of the switch.

A router is controlled by a software program that determines what devices are connected to it and how many ports are open at any given time. Routers are often complicated and need specific types of ports. They also can cause congestion due to the number of devices connected to them.

Network switches are controlled by hardware that allows the device to connect with other network devices more quickly than a router. In addition, a network switch doesn't require any software on computers because they connect directly to each other using Ethernet cables, which transmit through the switch and takes no time at all.

To keep things simple:

- A router provides a connection between multiple devices, while a network switch provides a connection within a single device.
- A router is a device that sends the signals through the Internet and into your business network, while a network switch sends traffic through different devices within the same network.
- A router keeps things simple by using one connection and switching all other devices to the same interface, while a network switch allows you to choose which device is connected in and out quickly.

### How Do a Home Router and Network Switch Work Together?

Let's recall the definition of a router and a network switch again.

The wireless router is an internet access point that connects your computers and other devices to a high-speed DSL or cable modem connection. The router is usually placed in your home or business.

A network switch has many ports that allow data to be transmitted between devices. For example, a switch can connect many printers and scanner devices together with its ports.

A home network will contain both a wireless router and switch, which sends the signals through the Internet into the business network wirelessly rather than using Ethernet connections between two separate locations.

A home router and network switch work as a middle device that connects to the Internet for communication purposes. The router then connects to the switches, which connect to all of your network devices.

A switch is typically used when there are many different devices because it transmits data without affecting other devices within the network. This is why you'll find a lot of routers and switches in larger offices or businesses where there may be hundreds of computers hooked up at one time.

## Network Switch Before or After Router?

The router is the hub of the devices on your network. The switch is a device that connects to all of these devices and sends data across them. In general, you use a switch before the router because it simplifies troubleshooting by allowing you to access all settings from one location instead of many different locations like with routers and hubs. It also offers easy access to the router's settings and tools via an Ethernet connection.

A network switch that is not connected to a router and is directly in the middle of your devices will work faster than a router because it allows for data to be transmitted without interruptions.



However, using a network switch before or after the use of a router often depends on what you need the device for. For example, suppose you're trying to connect two separate networks through Ethernet cables in order to send data and information from one side of your company's offices or building to another side. In that case, this is when switching over from using a router would be necessary as well.

However, putting a modem to switch to a router is not possible. This is why many devices have a built-in switch that can be easily adjusted to the router before internet access has been achieved. So, with this, you will use a switch before or after the router.

## What Is the Difference Between a Switch and a Hub?

A hub is a device that connects to multiple devices, while a switch is able to connect and disconnect from the Internet at any time without affecting the other devices connected to it. Meanwhile, a network switch is controlled by hardware that allows the device to communicate with other network devices more quickly than a router, which requires software on computers.

A network switch has many ports that allow the data to be transmitted between devices, whereas hubs only have one port for each connection. Therefore, when using hubs, you must consider that these one-port connections need power, or else they will not work correctly.

A hub transmits data for connection with a router or other hubs, while a network switch can directly connect with other devices.

A network switch is a device that connects to other devices, while a hub is a device that transfers data through its ports.

A hub creates congestion by having too many devices connected together simultaneously, while a network switch transfers data with no interruptions and works quickly.

However, the hub creates more traffic than the network switch because it connects all of the devices to one another, and there aren't any restrictions.

## Which Is Better: Network Switch or Hub?

A network switch is better for most homes because it provides more effortless connectivity between computers, better internet speeds, and a more straightforward troubleshooting process in general. However, a hub sends traffic out to all ports, slowing down your entire network, so there are no real benefits when using a hub over a switch.

Network switches are used within larger businesses because they allow the connectivity to be managed and easily controlled, allowing for a more efficient way to connect with other devices from a single location. Conversely, hubs fail when used for business purposes because they only support one connection where switches can handle multiple connections without affecting your devices or network.

A Network Switch can manage data from multiple devices at once, while Hubs can only handle one device at a time. Another reason why a Network Switch is better than a Hub is that it will only send data to the devices that are receiving them, while a hub sends all of its data to all devices connected to it at the same time.

### How Many Ports Does a Network Switch Have?

A network switch has many ports that allow data to be transmitted between devices. For example, a switch can connect many printers and scanner devices together with its ports. There are many types of switches that may have anywhere from 8 to 48 ports. The number of ports can vary depending on your specific needs and what you intend to use the switch for.

How many ports a switch may have depended on two things: the number of devices you intend to connect to via the switch and how many upstream ports can handle your internet connection. For example, if you're using a switch to connect all of your network devices together and create a central hub in your office or home that everyone can access, then it may have anywhere from 8-48 ports.

On the other hand, if your device only needs two ports to connect all of your computers and other devices directly to the Internet, then it will be easier to use a switch with fewer ports.

# How Many Ports Does a Network Switch Need?

A network switch is designed to connect multiple devices to one another. If you have multiple computers and other devices like printers and scanners that need to be connected together, having at least two ports would be best. The number of ports you require can vary depending on how many different devices need to be hooked up to the Internet and how fast you intend to have your internet speeds, but having at least two ports is best.

## Managed vs. Unmanaged Network Switches

### What Are Managed Switches?

A managed switch is a networking device that receives information from a network administrator, who will then handle the installation and monitoring of the data. Managed switches can support many devices connecting to one another and provide better internet speeds.

It has a Simple Network Management Protocol (SNMP), which can be used to monitor and manage the switch. This is important because it allows a network administrator to see whether the data is flowing properly and any problems with the network or devices connected to it.

It transmits data without interrupting other devices in the network. In addition, a managed switch is connected to multiple network devices and can provide access to all settings from one location. At the same time, routers need software on each device to access the settings. This is beneficial because it allows you to troubleshoot these devices with ease.

A managed switch also allows several computers to share a single printer, scanner, or other devices on the network without slowing down the network in any way. It also allows for better security and backup within your home or business network, so you never have to worry about losing your data.

### Benefits and Drawbacks of Managed Switches

A managed switch allows you to handle more settings of the network, which includes creating multiple different devices on the network without slowing it down at all. In addition, it has the ability to manage the network settings from one location, create or break off devices on the network without affecting any other devices on the network, and allows you to troubleshoot all of your network issues quickly.

This can translate to faster internet speeds that are possible, as well as the ability for a network administrator to handle and monitor all data. A managed switch also allows for better security and backup in the event of a disaster.

The drawbacks of a managed switch include that the switches can be difficult to set up, it has higher costs than other networking devices, and it's less efficient because you have to use the software on each device in order to view your settings.

Also, it is more expensive than a regular switch because it includes software and additional features. It's recommended to use a managed switch if you have multiple devices that need to be connected together on your network.

### What Are Unmanaged Switches?

An unmanaged switch is a networking device that is not connected to a network administrator. Therefore, it doesn't require software to be installed to monitor the network settings. It's recommended to use an unmanaged switch when you only need two devices or less of your own on the network.

It simply creates more Ethernet ports to which you can connect several devices on a local network. This is the best type of switch if you don't need to monitor your network settings or troubleshoot your data but instead just need multiple devices connected to one another. For example, if you have a computer and printer that need to be connected without using the Internet, then an unmanaged switch is for you.

## Benefits and Drawbacks of Unmanaged Switches

An unmanaged switch is cheaper than a managed switch because it doesn't include software on the device and has only a few ports. However, the disadvantages of an unmanaged switch include that there is no management, so you may need to use the software on each device in order to view your settings, the network can also be challenging to manage because there isn't any centralized location for handling the situation, and it's difficult for multiple devices to share one computer.

Unmanaged switches can be controlled by regular computer operating systems, and it will allow for easier installation. Having fewer features in an unmanaged switch can translate to fewer costs, but it could make troubleshooting devices within the network difficult. In addition, this type of network device requires more effort because settings need to be accessed from each device on the network individually, which means you'll need software installed on each device in order to access these settings.

# Locally-Managed vs. Cloud-Managed Switches

## What Are Locally-Managed Switches?

A locally managed switch is a networking device that is controlled and set up by the user. This connection will allow multiple devices in different locations to connect and share their resources while managing their own identities.

## Benefits and Drawbacks of Locally-Managed Switches

The benefits of a locally managed switch are that you will be able to manage your own network as well as the settings of each individual device. Another advantage is that you will be able to control the devices under your network separately from other network devices, even without the Internet.

The drawbacks of a locally-managed switch are that you may need to have hardware and software installed on each device to access the settings. It isn't easy to troubleshoot your network if you're using different devices on your network rather than one single device. It can be inconvenient when sharing resources. This also means requiring more work when setting up your network because several different steps are involved in the setup process. It can be challenging to install because you need to know how to access the network settings on each of your devices, but it can also be more efficient than a cloud-managed switch.



Also, a locally managed switch will have fewer security risks because there is no central server for the information. If someone misuses or hacks into this information, it won't affect all of your other devices on the network.

### What Are Cloud-Managed Switches?

A cloud-managed switch is a network device that allows multiple devices from different locations to be connected at a centralized location while maintaining control over each device and its computing power. This connection allows various devices in different areas to connect and share information while making sure the identities of each are secure, simplifying the monitoring of the network and troubleshooting wireless networks.

### Benefits and Drawbacks of Cloud-Managed Switches

Unlike locally-managed switches, you will be able to manage your network from one source. You will be able to control your network from many different devices from anywhere at any time using an easy-to-use dashboard, monitor your traffic, view essential metrics based on your data usage. With that, it is more efficient than locally managed switches.

This way, you can use the software as well as your internet connection. In addition, you'll be able to troubleshoot all of your devices without having to use the software on each device.

A cloud-managed switch is cheaper because there are no software costs. You'll be able to manage your network from any location and online. You receive support for remote management, and it has centralized access for viewing all settings at once. It is also ideal for large businesses or homes because the data is secure in a centralized location.

The disadvantages of a cloud-managed switch are that there are no rights to view your settings. You will need to access the right platform in order to access this information. Also, there may be higher costs, and the company will be in charge of setting up your network if you decide to switch it. Also, you may need to have wireless internet resources to use the platform. Finally, the cost of the switches is several times more than locally-managed switches.

### How Do Network Switches Know the MAC Addresses of the Devices in Their Network?

A network switch will use a 48-bit MAC address to identify the computers in their network. Then, it will automatically store the MAC addresses within its internal database, and it will keep track of the devices that are connected. This way, a network switch won't have to broadcast every packet sent out on its network, so it will only send packets to the devices receiving them.

A device's MAC address is stored on each of the switch's ports. This address contains all of the information about that device, including location, the protocol used, and port. This way, when data is being sent to a particular device, the switch will be able to find the MAC address that it's looking for in its database. When the MAC address is found in its database, it will then send packets directly to that device's port.

## Network Switch and IP Address

### Does a Network Switch Have an IP Address?

Only managed network switches have an IP address. It will have an IP address assigned to them so that their networking program can communicate with it.

The address will be accessed using DHCP or BOOTP on the client, but these settings are not needed for most managed network switches. So instead, the switch will use the information in its MAC databases and your IP address to know what port your data should be sent to. This way, the switch ignores any data that's not directly addressed or destined for its own ports.

### Why Do Some Network Switches Have an IP Address?

Some network switches have an IP address because they can identify the devices on their ports. Another reason for having an IP address is for simplifying the network. If a switch has an IP address, it will know who needs what when there are multiple ports to send data to.

For a switch to be able to handle data that is addressed to other ports, it will need an IP address. Otherwise, the switch will not have the ability to know where the data needs to go. In addition, to help simplify the network, some network switches will have an IP address so that they can identify the devices on their ports.

### How to Find the IP Address of a Network Switch?

If you want a device with an IP address, such as your network switch, you must get into your router and find out what its IP address is. Usually, you can look at the port number next to the router's name on your device. It will be lowercase letters and numbers, such as '192.

There are many different ways that you can find the IP address of a switch. Some switches allow you to view their IP address by simply using your computer's web browser and navigating to the port number on the front of the device. You'll also be able to view this information directly on your network dashboard if you're using a cloud-managed switch. If you're trying to find out what an IP address is for a locally-managed switch, then in order for it to be able to identify devices on its ports, it will need an IP address.

Another way to check the IP address is through your router. If you purchased your switch from a manufacturer, they would have the IP address of your switch in the manual or online. You'll also be able to find the manual at any electronics store that sells this type of networking device. However, this differs from router to router, so you must consult their documentation for more information on how to find the info.

# Can Network Switches Improve Network Speed?

Network switches are not meant to improve network speed when they are simply used on their own. If the switch is placed on a hub with a better connection or located in an area where the signal is strong, then its speed will increase. It will also only work if it is connected to a router that has more bandwidth.

However, an important point to remember about switches is that they cannot improve network speed without working with routers. This is because switches need routers for them to be able to identify which devices need which data and where they need it sent. Therefore, a switch will only improve network speed if it is connected to a router with better bandwidth.

Thus, you may wonder,

# Can Network Switches Reduce Speed As Well?

Network switches can't reduce the speed of your network unless you're referring to hardware speeds. Again, the switches do not slow down or alter your network data transfers. If you're referring to the speeds of applications and software, then they can.

This means your network switch will not speed up or slow down the network, but it can allow multiple devices to take advantage of faster speeds. In short, network switches will not slow down your network, and they don't affect data transfer speeds.

### How Much Do Network Switches Cost?

The cost of a network switch will vary depending on the brand and sort of model that you choose. If you're interested in saving money, it may be worth getting a low-cost or used switch. However, if you want to get something fast and updated with new features, then an expensive switch is the way to go.

The cost of a network switch is not just about the price that you're paying for the device itself. If you're looking to invest in a high-performance network switch, then it's recommended that you make sure that your home or business network can handle fast data transfer speeds. This means your computer and other connected devices will need to be running on any operating system with multicore support so they can take advantage of faster speeds.

All in all, the pricing range is typically between \$40 - \$500.

### How to Use a Network Switch?

Connecting via a local network cable is a straightforward process that you can do yourself easily. If you are unsure of this, check the instruction manual that comes with your switch for more information on operating it.

If you need to connect through a wireless network, then you should use it with your router. This means either connecting through an internet service provider if this is available or connecting to a wireless router for your network.

Typically, on the back of the device or the side, you will find a port number. To connect your devices to any of these ports, simply plug them into that port. For example, if you're using a switch with all ports facing towards you, then your desktop and workstation computers will connect through the uplink port on the front of the device. If there's more than one uplink port available on your device, then they will display what is configured with each uplink port.

To use this network switch, simply toggle it into "Uplink" mode and find what channels are matched up to each individual connection that's currently active. You can also leave it in "Auto-Uplink" mode so that it automatically finds the best-matched connections for each particular device.

To help identify what ports are connected to what, you can also view this information in your network settings on your computer or using a network analyzer. You can also use a third-party software program such as Network Scanner to see this information. If you're using an IP address-based switch, then it will be listed in its firewall or gateway tables.

# How to Set Up a Network Switch With a Router?

To set up your network switch, you will need first to plug in the device. You may find detailed instructions on the side or back of the switch. If you don't see any instructions, just verify that there is power coming out of an outlet and make sure your device is plugged into it securely.

Next, take a look at what ports are available on your network switch. There should be one labeled "Uplink" or "Internet Connection." This port should already be plugged into an Ethernet cable connected to the router's WAN/Internet port (or uplink port). The other ports on the network switch are for connecting computers to this device via jack cables. You can find a "Network" cable or patch cable in most computer stores or computer parts stores.

To verify that your devices are connected to the switch, you can test your connection by trying to access the Internet and sending out status information using the ping command. If you're using a standard IP address-based network switch, then you will need to know the IP address for your device. Then, using ping, you can send a "ping" to that device's IP address and see if it is appropriately responded back.



# How to Choose Between a Managed and Unmanaged Network Switch?

A managed switch is a device that has built-in features to oversee the performance of network traffic. Therefore, it is most commonly used in networks that have many connected computers and devices. What you want to look for is whether the switch is managed or unmanaged.

The main difference between a managed and unmanaged network switch is that managed switches support advanced features like bandwidth management and failover. However, they can still be challenging to set up.

A managed switch is recommended if you have a home network with multiple devices that are connected together.

However, an unmanaged network switch is the best choice if you only have a small network with just a few devices. It is more appropriate for small networks with just a few devices because they don't need as much management. Also, the main reason for this is because it's easier to set up, and it doesn't require advanced features that can improve your home network.

- Managed network switches are typically more expensive but offer diagnostics and management capabilities.
- Unmanaged switches work great for the home, business, or dorm without any special tweaking required on your end.

## Conclusion

Network switches are essential for allowing network infrastructure to be connected together. This is often in the form of computers, printers, and routers that interconnect with other networks.

When it comes down to what you should buy, you will need to do some research on the type of switch you are looking at, but a good rule of thumb is to consider what you need it for and how many devices will connect to the switch overall.

Managed network switches, in particular, are very helpful in expanding the capabilities of your network. The main thing you will need to focus on is if you want something that has a lot of features or not.

If you don't like too much bells and whistles, then it may be better to get an unmanaged switch that doesn't have features like bandwidth monitoring and failover support. On the other hand, if you want additional management, then getting a managed switch is recommended so that you can take advantage of its advanced features and diagnostics.

