

Article Overview

Access switches connect devices within a local network, while routers connect multiple networks and manage traffic between them, including internet access.

Access Switches

An access switch is a network device that connects multiple wired devices, such as computers, printers, and servers, within a local area network (LAN). Switches operate primarily at the data link layer (Layer 2) of the OSI model, forwarding data in the form of frames to the correct device based on MAC addresses. They reduce network collisions and improve efficiency by creating dedicated communication paths between devices. Switches can be unmanaged, offering plug-and-play simplicity, or managed, providing advanced features like VLANs, Quality of Service (QoS), port security, and monitoring. Some switches also support Power over Ethernet (PoE) to power devices like access points and IP cameras directly through the network cable .

Routers

A router connects multiple networks, such as a LAN to the internet or between different LANs. Routers operate at the network layer (Layer 3) and forward data in the form of packets based on IP addresses. They determine the most efficient path for data to travel and can provide network address translation (NAT), firewall protection, and traffic prioritization. Routers are essential for enabling devices within a network to communicate with external networks and the internet. In small business or home networks, a single router can connect multiple switches and manage all connected devices .

How They Work Together

In a typical network setup: ISP -> Router -> Switch -> Devices / Access Points

- o The router connects the internal network to the internet and manages IP addressing and routing.
- o The switch expands the number of wired connections, allowing multiple devices to communicate efficiently within the LAN.
- o Access points can be connected to switches to provide wireless connectivity, extending the network to Wi-Fi devices .

Key Differences

Feature	Access Switch	Router
Function	Connects devices within a LAN	Connects multiple networks and manages traffic
OSI Layer	Layer 2 (Data Link)	Layer 3 (Network)
Data Unit	Frame	Packet
IP Handling	Does not assign IP addresses	Assigns and manages IP addresses
Internet Access	Requires router to access internet	Provides internet access to connected networks
Advanced Features	VLANs, PoE, port security	NAT, firewall, QoS

Access Switches and Routers

firewall, routing protocols, QoS

Understanding the roles of switches and routers is critical for designing efficient networks, ensuring proper connectivity, and optimizing performance for both wired and wireless devices. Proper placement and configuration of these devices prevent bottlenecks and maintain network reliability .

A network switch forwards data between devices, unlike routers, which forward data between networks.

This guide walks through the eight core network devices you meet first: routers, Layer 2 and Layer 3 switches, next

Understand access points, routers, and network switches with this practical guide to structured cabling, PoE design,

Compare Access, Distribution, and Core switches: understand their roles, features, and differences in enterprise network hierarchy.

Router vs Switch vs Access Point: Key Differences Explained JUL 14, 2025 | ****Introduction to Networking Devices**** As

A router connects your network to the internet, while a switch links devices within your LAN. Compare router vs switch

What is the difference between an Ethernet switch and a network switch, hub and router? Find out how to decide which

Don't overspend on network hardware. Our expert guide explains core, distribution, and access switches so you can

Here are all the differences you should know between a modem, a router, a switch and an access point while setting

This article focuses on the hierarchical internetworking and core switch vs access switch differences. We also

Router Ethernet/RJ45 cables Switch/Hub Access point Power line Routers and Access Points Netgear WiFi 6 Router

Without the switching function the devices could talk through the router to the greater

Routers move traffic between networks, switches connect wired devices on a network, and access points

Access Switches and Routers

provide Wi-Fi

Explore the crucial role of an access switch in your network. Learn how it connects end-users and devices via

Don't know the difference between a modem and a router? Unsure what an access point

This tutorial has provided an overview of the routers, switches, access points, and gateway

Web: <https://www.supremeacademicresearch.co.za>

