

How Does a Router Work?

Learn how routers securely connect your small business to the rest of the world and connect your devices, including laptops and printers, to each other.

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What does a router do?

Routers connect computers and other devices to the Internet. A router acts as a dispatcher, choosing the best route for your information to travel. It connects your business to the world, protects information from security threats, and can even decide which computers get priority over others.

Why do you need a router?

A router helps you connect multiple devices to the Internet, and connect the devices to each other. Also, you can use routers to create local networks of devices. These local networks are useful if you want to share files among devices or allow employees to share software tools.

If you don't have routers, your business's data won't get directed to the right place. For example, if you'd like to print a document, you need a router to help get that document to a printer—not to another computer or a scanner.

How do modems differ from routers?

A modem connects your business to Internet access via your internet service provider (ISP). A router, on the other hand, connects many devices in a network—including modems. With a router in place, modems and other devices can communicate from one location to another.

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What are the different types of routers?

Wired routers

Wired routers usually connect directly to modems or wide-area networks (WANs) via network cables. They typically come with a port that connects to modems to communicate with the Internet.

Wireless routers

Routers can also connect wirelessly to devices that support the same wireless standards. Wireless routers can receive information from and send information to the Internet.

How routers route data

Routing, defined

Routing is the ability to forward IP packets—a package of data with an Internet protocol (IP) address—from one network to another. The router's job is to connect the networks in your business and manage traffic within these networks. Routers typically have at least two network interface cards, or NICs, that allow the router to connect to other networks.

Speeding data across networks

Routers figure out the fastest data path between devices connected on a network, and then send data along these paths. To do this, routers use what's called a "metric value," or preference number. If a router has the choice of two routes to the same location, it will choose the path with the lowest metric. The metrics are stored in a routing table.

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the router looks at the packet's destination IP address and then searches for the routing information in the routing table.

If you are managing a network, you need to become familiar with routing tables since they'll help you troubleshoot networking issues. For example, if you understand the structure and lookup process of routing tables, you should be able to diagnose any routing table issue, regardless of your level of familiarity with a particular routing protocol.

As an example, you might notice that the routing table has all the routes you expect to see, yet packet forwarding is not working as well as expected. By knowing how to look up a packet's destination IP address, you can determine if the packet is being forwarded, why the packet is being sent elsewhere, or whether the packet has been discarded.

Managing routers

When you need to make changes to your network's routing options, you log in to your router to access its software. For example, you can log in to the router to change login passwords, encrypt the network, create port forwarding rules, or update the router's firmware.

How routers can help your business

Sharing applications

Routers help give employees access to business applications and therefore improve productivity—especially for employees who work remotely or outside main offices. Routers can also enable specialized services such as VoIP, video conferencing, and Wi-Fi networks.

Speeding access to information

With routers in place, your business can improve responses to customers and enable easier access to customer information. These are real benefits at a time when customers demand fast answers to questions, as well as personalized service. By using routers to build a fast and reliable small business network, employees are better able to respond rapidly and intelligently to customer needs.

Reducing operating costs

Routers can have a positive impact on your bottom line. Your small business can save money by sharing equipment such as printers and servers, as well as services such as Internet access. A fast and reliable network built with routers can also grow with your business, so you don't have to keep rebuilding the network and buying new devices as the business expands.

Improving security

Routers can help you protect valuable business data from attacks if they offer built-in firewalls or web filtering, which examines incoming data and blocks it as needed.

Enabling secured remote connections

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for many businesses that have virtual teams and home-based telecommuters who need to share critical business information at any time of the day or night.

Creating small business networks with routers

Invest in business-grade **switches** and routers

Consumer or home networking products won't keep pace with the challenges of business growth.

Build networks that can grow over time

This way, you can add features and functionality when needed, such as video surveillance, VoIP, integrated messaging, and wireless applications.

Choose routers designed with reliability and redundancy

This provides the business continuity you'll need to bounce back quickly from unforeseen and disruptive events, like natural disasters.

Want to learn more?

Security

Our resources are here to help you understand the security landscape and choose technologies to help safeguard your business.

Collaboration

These tools and articles will help you make important communications decisions to help your business scale and stay connected.

Networking

Learn how to make the right decisions for designing and maintaining your network so it can help your business thrive.

Resource Center

Get how-to's, checklists, and other tips to help you meet those demands and to help your business scale and thrive.

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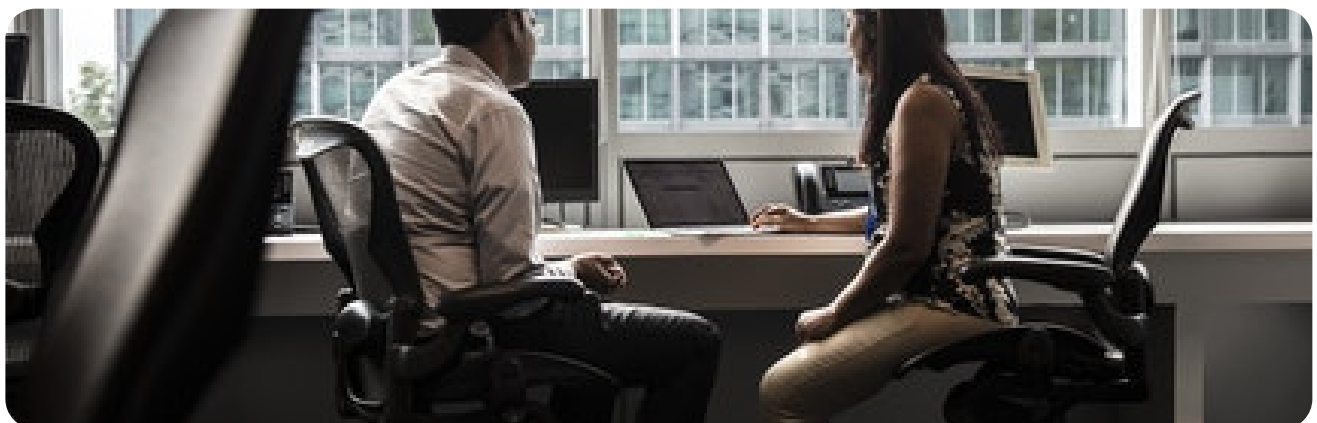
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