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Small Business Networking Resources /

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 transfer data 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.

Creating a routing table

A routing table, which is stored on your router, is a list of all possible paths in your network. When routers receive IP packets that need to be forwarded somewhere else in the network, 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

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to respond rapidly and intelligently to customer needs.