- **Network attached storage (NAS):** NAS is considerably simpler than SAN; NAS storage is simply disk storage that is connected to your Ethernet network. To use NAS, you purchase one or more NAS appliances, which contain disk storage and a controller that presents the disk storage to the network. Because NAS is accessed via your Ethernet network, it's considerably slower than SAN storage. But it's also considerably less expensive.

Focusing on File Servers

Now that we've looked at the basics of how disk storage works and how it can be attached, let's turn to the main way in which you can create and manage storage on your network: by setting up one or more *file servers*. A *file server* is simply a network server whose primary role is to share its disk storage. Using a file server is the most common way to provide shared network storage.

A file server can be anything from a simple desktop computer that has been pressed into service as a file server to an expensive ($25,000 or more) server with redundant components so that the server can continue to run when a component fails.


TIP

The rest of this chapter is devoted to showing you how to configure Windows Server 2019 to run as a file server.

Understanding permissions

Before I get into the details of setting up a file server, you need to have a solid understanding of the concept of permissions. *Permissions* allow users to access shared resources on a network. Simply sharing a resource, such as a disk folder or a printer, doesn't guarantee that a given user is able to access that resource. Windows makes this decision based on the permissions that have been assigned to various groups for the resource and group memberships of the user. For example, if the user belongs to a group that has been granted permission to access the resource, the access is allowed. If not, access is denied.

In theory, permissions sound pretty simple. In practice, however, they can get pretty complicated. The following paragraphs explain some of the nuances of how access control and permissions work:

- Every object — that is, every file and folder — on an NTFS volume has a set of permissions — the Access Control List (ACL) associated with it.