

Organizing Your Files With Microsoft Distributed File System Version 4.1

By Brien M. Posey

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Someone once said that you can never be too rich, too thin, or have too much free hard disk space. When it comes to servers, the latter is especially true. Unfortunately, as your organization grows, you'll probably max out your server's hard disk capacity and have to move some files to a different server. In a small office, doing so is usually a minor inconvenience. However, in large companies, moving files to a different server can mean changing drive mappings on thousands of clients.

But there's a solution. Microsoft's Distributed File System Version 4.1 (Dfs) lets you move files to a different server while creating the illusion that they never moved. In this article, we'll discuss the ways you can use Dfs to save yourself work and we'll demonstrate the procedure used to create a distributed file system.

Dfs Capabilities

As we mentioned, Dfs can make files stored on different servers appear to the end user to be located on the same server. For example, suppose your company is small, with only a few servers. Suppose that one of those servers is a dedicated file and print server for the finance department. Now, imagine that the company has grown to the point that all the finance information will no longer fit on a single server. You might need to designate one server for budget reports, another for accounts payable reports, and yet another for accounts receivable reports. You'd have to change some drive mappings—but the files would be manageable, because they're grouped in categories. However, what would happen if the accounts receivable reports became too large to fit on a single server? The finance department's employees would have a terrible time keeping track of which server to look on for a particular report.

Now, let's take another look at the same example using Dfs. When the company begins to grow, you could move files to different servers but use Dfs to create the illusion that nothing has moved. Even when you distribute the accounts receivable reports among multiple servers, to the end user everything looks the same as it did in the good old days, when it all fit in one place.

Dfs lets you create a virtual server with unlimited disk space. Any time you run out of hard disk space, you can simply add another server to the Dfs tree. And, as if this weren't amazing enough, these distributed servers don't all have to be Windows NT.

However, Dfs requires at least one Windows NT Server. This server hosts the Dfs tree and controls access permissions. But you can build a Dfs tree consisting of shares from other Windows NT Servers, NT Workstations, Windows 98, and Windows 95 PCs. If you're running the appropriate support services, you can even include Novell NetWare volumes and removable media in the Dfs tree.

In Figure A, you can see an example of a Dfs tree made up of these various sources. (Of course, in real life your directory names probably wouldn't reflect the type of operating system hosting the share. Instead, each directory would look like any other, giving no clues that its subdirectories were scattered on who-knows-how-many computers.)

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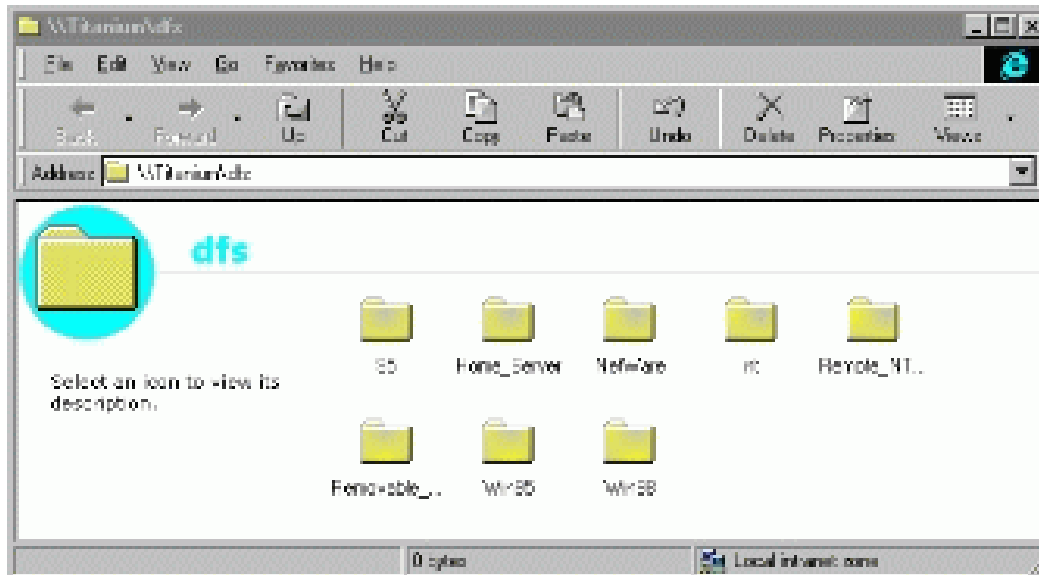


Figure A: Dfs can include shares located on several different operating systems.

Dfs limitations

Unfortunately, all good things come at a price. The price for having a server with an infinite amount of hard disk space is that you must load a special driver on Windows 95 clients for them to access the Dfs tree. Otherwise, directories in the Dfs tree will appear to be empty. Windows 98 and Windows NT can access a Dfs tree with no special configuration.

Another downside is that a single file can't span multiple servers. For example, in a large organization, the Microsoft Exchange database files can become very large. Because each of these databases consists of a single file, you can't use Dfs to make more disk space available for this file to grow beyond the physical limits of its home server.

The reason is that Dfs makes a remote volume's share appear to be a subdirectory of a master share. Therefore, files on each volume appear to be contained within a separate subdirectory. Needless to say, a file can't span servers because part of it would have to be in one subdirectory while the rest of the file was in a different subdirectory.

Organizing the location of distributed files

Before you build your distributed file system, it's important to stop and do some planning. If you don't organize the structure of your distributed file system carefully, you could end up with a confusing file-system tree.

The first step in the planning process is to select a volume on your server that has plenty of free disk space. When you set up your Dfs tree, you'll create a share on this volume. This share will become the root directory for the Dfs tree. Any other volumes you include in the Dfs tree will appear as subdirectories of this root directory.

Once you've figured out where to establish your root share, think about what you want to include in the distributed file system. You can only add shares to Dfs. So, to avoid confusion, it's a good idea to make sure that no two machines whose data you plan to include have the same share names. Also, if

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you want to allocate more disk space to the Dfs tree by adding a server, you'll have to create a share on that server—the added disk space will be available to clients only through the resulting subdirectory. You can't increase the amount of space available in the root directory by adding a server.

Downloading and installing Dfs

Microsoft released Windows NT Version 4.0 before Dfs was completed. As a result, most copies of NT don't contain this feature. (The few copies that do include Dfs actually contain a non-functional version.) Therefore, you'll have to download the service from Microsoft before you can use it.

Note that Dfs comes in the form of an executable file. Simply run the file to expand it. When you do, the executable file will automatically copy the files it contains into their appropriate directories.

When the decompression process completes, follow these steps:

- Double-click the Network icon in Control Panel. When the Network Properties sheet opens, click the Services tab and click Add.
- Select Dfs from the Network Services window and click OK. At this point, you'll see the Configure Dfs dialog box, shown in Figure B. As we said earlier, only one Windows NT server is required for hosting a Dfs tree.
- Because you'll be using this server as a Dfs host, select the Host A Dfs On Share check box.
- Select the share that you wish to use for the root directory of the Dfs tree. (If you don't have a suitable share, you can click the New Share button to create a share.)
- Click OK to continue. Click OK again to close the Network Properties sheet. When you do, your Windows NT Server will reboot.

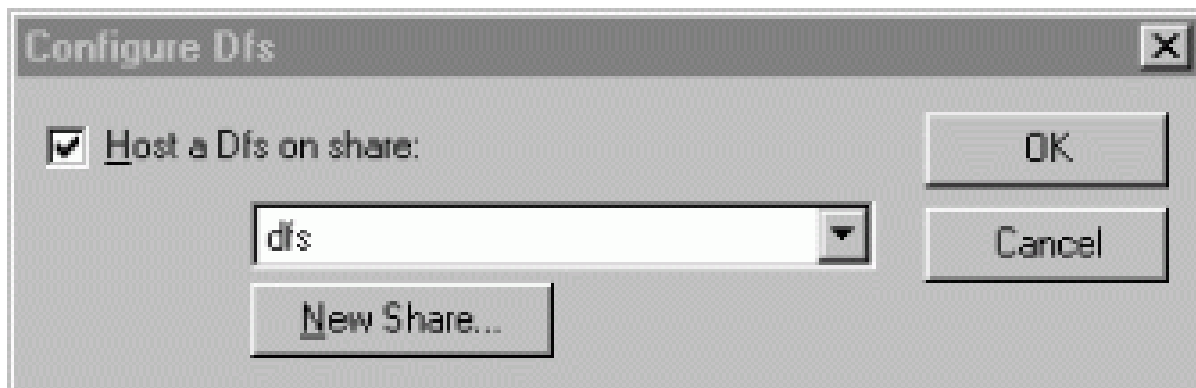


Figure B: The Configure Dfs dialog box lets you establish the root directory of your distributed file system.

Adding shares to Dfs

So far you've created a root directory but no subdirectories. Creating subdirectories from shares on other computers requires you to use the Dfs Administrator program. You can access Dfs

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Administrator through the Administrative Tools (Common) menu. Figure C shows an example of the Dfs Administrator program.

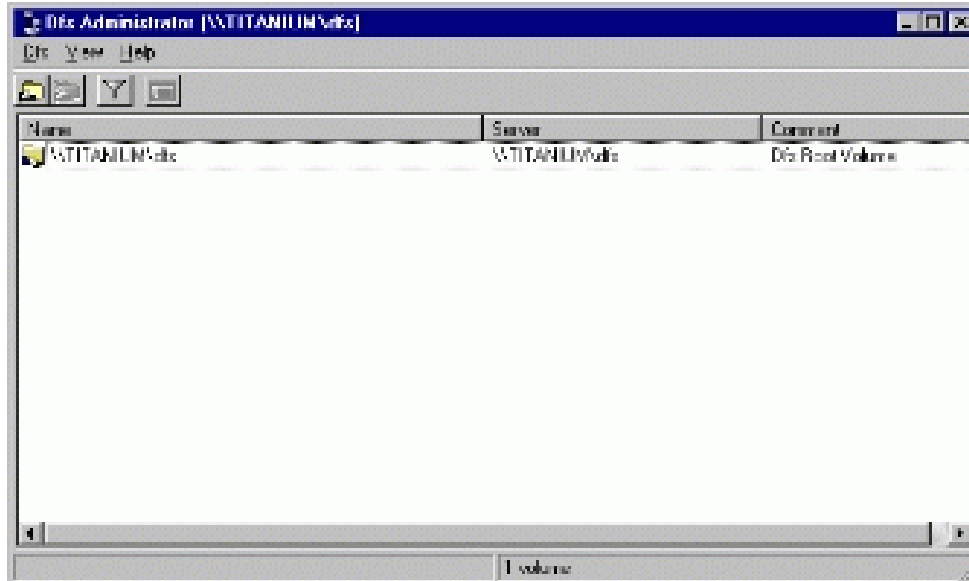


Figure C: You can use Dfs Administrator to add shares to the Dfs tree.

As you can see, the share you selected earlier appears as the Dfs root volume by default. Now you can add another share to the distributed file system by selecting the Add To Dfs command from the Dfs menu. When you choose this command, the resulting window will seem somewhat overwhelming at first glance. But it's actually quite simple.

Begin by typing the name you'd like to assign to the subdirectory within the Dfs tree. Next, type the path to the share you'd like to assign to the subdirectory. Then, you can type an optional comment to help you remember why this entry is part of your tree.

For example, in Figure D you can see that we included the share \\ Talainia\ mspclnt in our Dfs tree. Since this share name is somewhat cryptic, we named the subdirectory Proxy instead of Mspclnt and included a comment indicating that this directory contains the Microsoft Proxy Client. As you can see in Figure E, Dfs makes the Proxy directory we created appear to be just another directory located on the server, like the 95 and NT directories.

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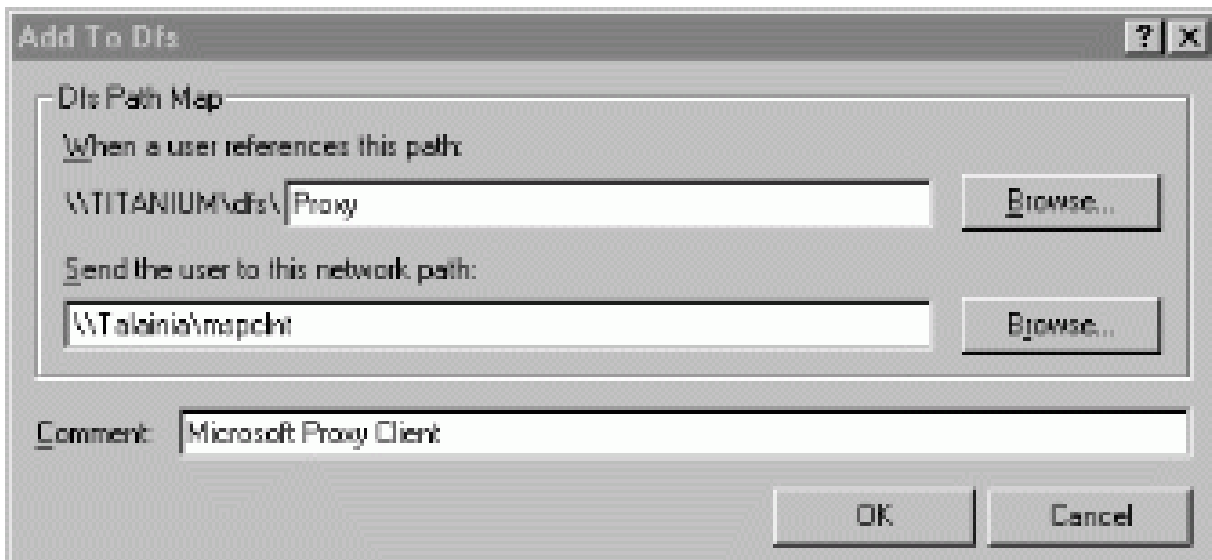


Figure D: You can make the directory name different from the share name.

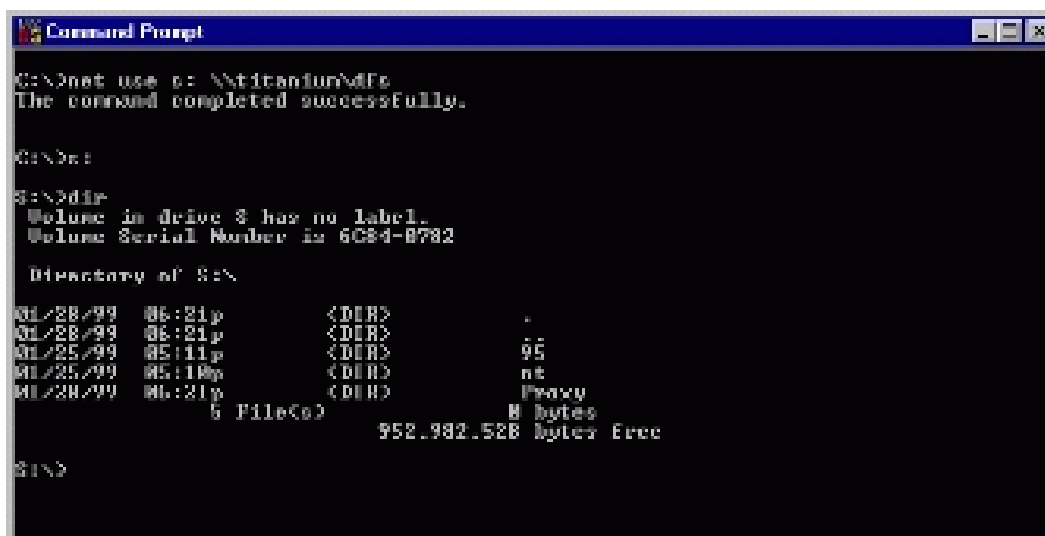


Figure E: The virtual directory Proxy looks just like the real 95 and NT directories.

If you ever decide to remove a share from the Dfs tree, simply select the reference to it in the Dfs Administrator and press the [Delete] key. Removing a share from the Dfs tree only makes it inaccessible through the tree. The actual data still exists, and you can access the share through its original name.

Installing the Windows 95 Distributed File System Client

In the accompanying article, we show you how to build a Dfs tree, add shares to it, and remove shares from it. However, if you have clients running Windows 95, you must install the Windows 95 Dfs

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client. To do so, run the Drs_V41_Win95Client.exe file from within Windows 95. Doing so decompresses the client files and copies them to the \ Windows\ System\ Dfs directory.

Next, open Control Panel, double-click the Network icon, and follow these steps:

- Click Add, double-click Service, and click Have Disk.
- Provide Windows 95 with the path to the client files and click OK.
- Select Dfs Services For Microsoft Network Client, click OK, and then click OK again.
- When Windows 95 asks if you want to restart your computer, click Yes.
- Now, when the computer restarts, it should be capable of browsing the DFS tree.