

Distributed File System - DFS

10/2008

Distributed File System (DFS) is one of the most useful and underutilized features of Active Directory and Windows file servers. With DFS, system administrators can make it easy for users to access and manage files that are physically distributed across a network. With DFS, you can make files distributed across multiple servers appear to users as if they reside in one place on the network. Users no longer need to know and specify the actual physical location of files in order to access them.

Here is a simple example of what you can do:

The Butterfly Science Department has 3 file shares on 3 different servers:

[\\svc01\Users](#)

[\\svc02\Groups](#)

[\\svc03\Projects](#)

The admin has mapped 3 drive letters for users to access the files on the different servers. With DFS, these can all be combined under a single virtual file system using DFS and be mapped to a single drive. Additional file shares can be added or existing ones changes on the fly without users having to know about it.

Prerequisites

1. You will need to supply the name of one or two “Namespace” servers to hold the DFS root or pointer. This information is stored in AD and used by clients to find file shares. Two servers will provide redundancy. No files will be stored on these servers.
 - a. Servers can be Windows 2003 or Windows 2008.
 - b. (Optional) A server with Windows 2003 R2 or Windows 2008 with the DFS Management snap-in. This is needed to use advanced DFS features.
 - c. The DFS Service must be installed and started on these two servers.
 - d. There must not be a firewall blocking access from ITCS servers.
2. Have the names of the file shares handy. You can create the file shares on the fly as you add them as folders. Sometimes this is easier because it allows you to set the necessary permissions.

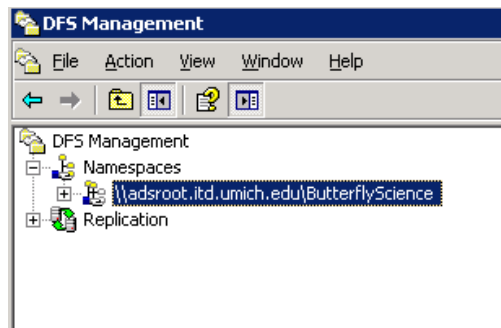
Note: The documentation always says adsroot.**itcs**.umich.edu, but the screenshots were all taken from the test forest and say adsroot.**itd**.umich.edu.

Basic Procedure

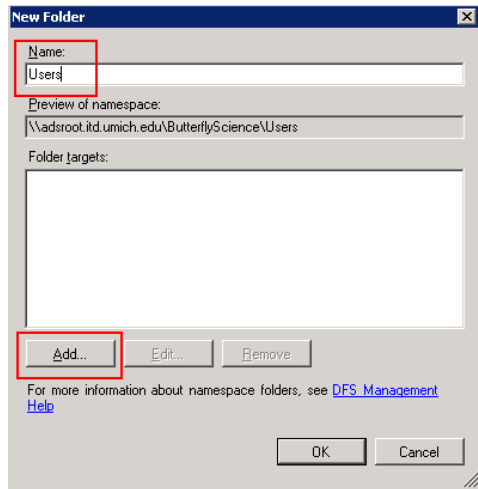
1. Contact ITCS (windows.support@umich.edu) to set up the initial DFS folder for your unit. Once the initial Namespace setup is complete, it will be delegated to your OU Admin group.
2. ITCS will create DFS Roots on one or two servers:
 - a. In this case we will use SVC01 and SVC02. These can be the same or different servers as the file shares.
 - b. A directory named C:\DFSRoots\ButterflyScience will be created on each server by ITCS. (Do not make any changes to this directory or store files in it.)

The following step can be done by the OU Admin, but ITCS can create the initial folder links for you.

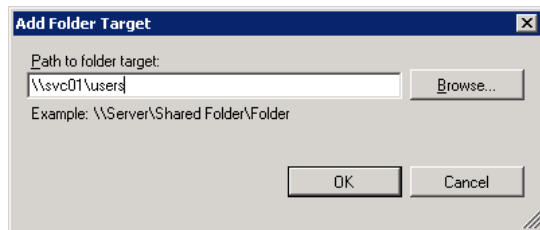
3. Open the DFS Management Snap-in and the new Namespace.
 - a. Start the DFS Management Snap-in
 - b. Select Action > Add Namespaces to Display from the menu.
 - c. Set scope to “adsroot.itcs.umich.edu” and click “Show Namespaces” button.
 - d. Select \adsroot.itcs.umich.edu\ButterflyScience



4. Add Folder targets
 - a. Select Action > New Folder
 - b. Enter “Users” for Name
 - c. Click “Add” to select the file share.



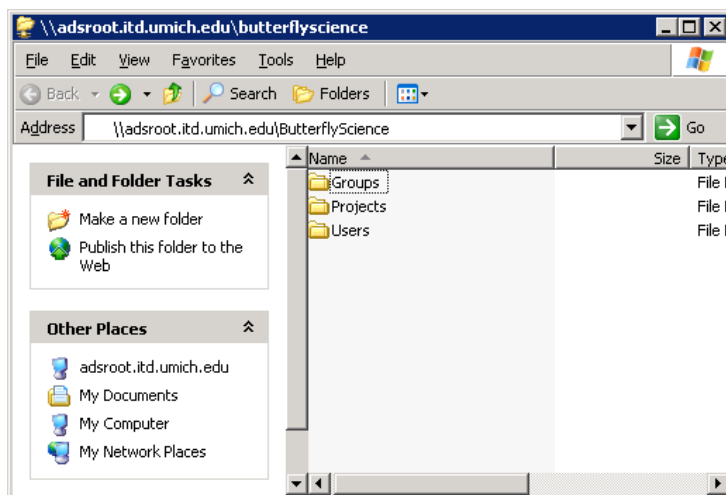
- d. Enter file share name or browse. You can also create file shares on the fly.



- e. Repeat for additional file shares.

5. Your users can now map a drive to the following file share and see all the folder targets on the different servers:

[\\adsroot.itcs.umich.edu\ButterflyScience](https://adsroot.itcs.umich.edu/ButterflyScience)



Advanced Features

Campus DFS Hierarchy

Your DFS hierarchy is a member of the campus DFS hierarchy in addition to your own DFS hierarchy. The campus DFS is accessed here:

<\\adsroot.itcs.umich.edu\Dfs>

For example, The Butterfly Science DFS is available at both:

<\\adsroot.itcs.umich.edu\ButterflyScience>

<\\adsroot.itcs.umich.edu\Dfs\ButterflyScience>

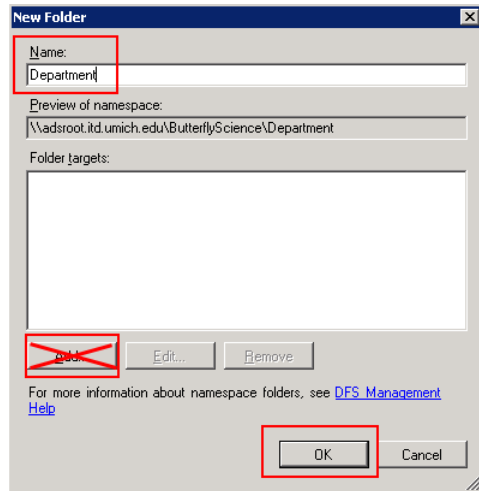
Using WebDAV and SFTP

You can use your DFS Root as a target for remote access using WebDAV or SFTP. In this way, all your file storage is accessible from one place

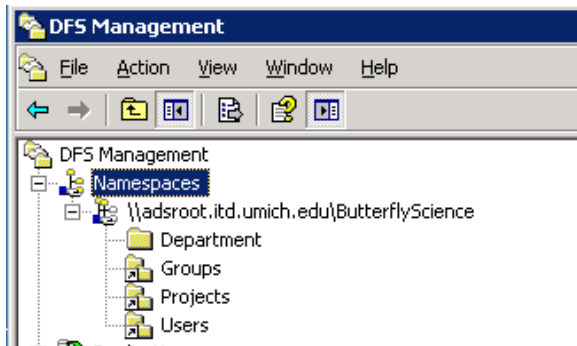
Nested Folders

What if you want a more complex file structure. For example, what if you wanted a Department Folder and each folder beneath that were a share on a separate server?

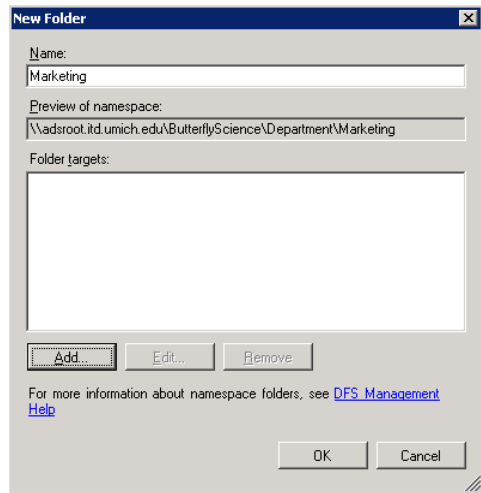
1. Open the DFS Management Snap-in and add your Namespace
2. Add Folders
 - a. Select Action > New Folder
 - b. Enter "Department" for Name
 - c. Click "OK" to finish. Do not add a file share.



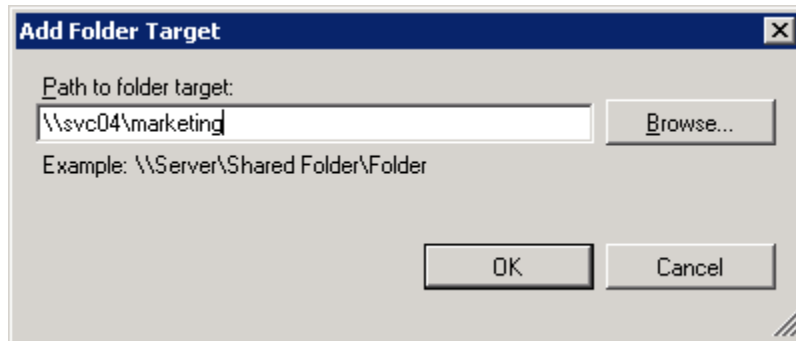
3. Notice that Department does not have a shortcut icon because it is a DFS namespace folder.



4. Add Folder targets under Department
 - a. Right click on "Department"
 - b. Select Action > New Folder
 - c. Enter "Marketing" for Name
 - d. Click "Add" to select the file share.

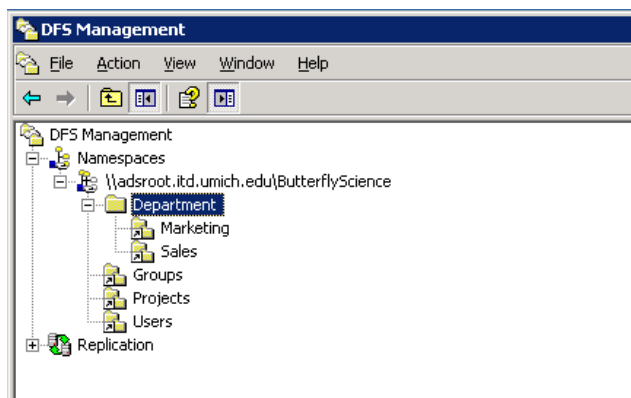


- e. Enter file share name or browse. You can also create file shares on the fly.

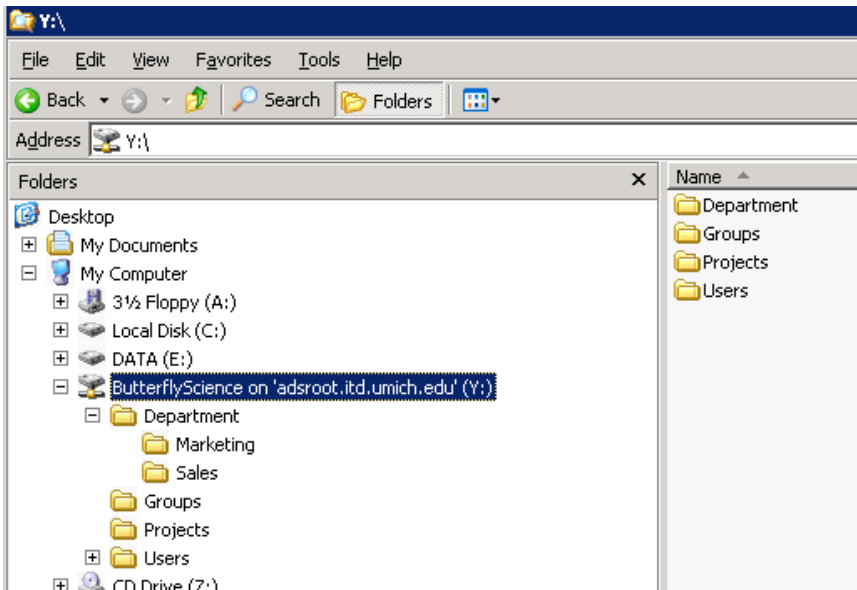


- f. Repeat for additional file shares such as "Sales"

5. DFS now looks like this:



6. Users see this. 4 folders at the root with a total of 5 folders with data on 5 different servers!



DFS Replication

It is possible to specify multiple file shares for the same folder target and replicate data between them. This is only meant to be used for Read Only file shares because users access a randomly selected file share. If 2 users write to the same file on different file shares the last writer wins.

Resources

<http://technet.microsoft.com/en-us/library/cc738688.aspx>