

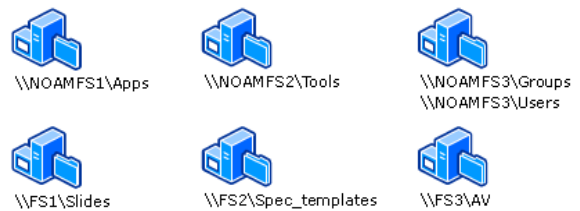
Distributed File System (DFS) allows administrators to group shared folders located on different servers by transparently connecting them to one or more DFS namespaces. A DFS namespace is a virtual view of shared folders in an organization. Using the DFS tools, an administrator selects which shared folders to present in the namespace, designs the hierarchy in which those folders appear, and determines the names that the shared folders show in the namespace. When a user views the namespace, the folders appear to reside on a single, high-capacity hard disk. Users can navigate the namespace without needing to know the server names or shared folders hosting the data. DFS also provides many other benefits, including fault tolerance and load-sharing capabilities, making it ideal for all types of organizations.

These sections provide an in-depth view of how DFS works in an optimal environment. An optimal environment for DFS is defined as follows:

- Domain Name System (DNS) and Active Directory replication are working properly.
- Sites and site costs in Active Directory are configured properly.
- The domain controller acting as the primary domain controller (PDC) emulator is working properly.
- The Distributed File System (DFS) service is running on all domain controllers and root servers.
- Client computers are running one of the following operating systems: Windows NT 4.0 with Service Pack 6a, Windows 2000 with Service Pack 4 or later, Windows XP with Service Pack 1 or later, or Windows Server 2003.
- Client computers are properly joined to the domain.
- No firewalls block remote procedure call (RPC) ports used by DFS and the DFS root server that hosts DFS. These ports are described in “Network Ports Used by DFS” later in this section.
- The **Bridge all site links** option in Active Directory must be enabled. (This option is available in the Active Directory Sites and

Services snap-in.) Turning off **Bridge all site links** can affect the ability of DFS to refer client computers to target computers that have the least expensive connection cost. An Inter-site Topology Generator that is running Windows Server 2003 relies on the **Bridge all site links** option being enabled to generate the intersite cost matrix that DFS requires for its site-costing functionality. If you turn off this option, you must create site links between the Active Directory sites for which you want DFS to calculate accurate site costs. Any sites that are not connected by site links will have the maximum possible cost. Windows 2000 domain controllers and Windows 2000 DFS root servers do not have the **restrictanonymous** registry entry set to 2. (This registry entry is located at HKEY\_LOCAL\_MACHINE/SYSTEM/CurrentControlSet/Control/Lsa.) For more information about this registry entry, see “DFS Client and Server Compatibility” and “How Site Discovery Works” later in this section.

#### Example of Physical Servers and Shared Folders in Contoso.com



When the IT group in Contoso.com implements DFS, they must first decide the type of namespace to implement. Windows Server 2003 offers two types of namespaces: stand-alone and domain-based. The IT group also chooses a root name, which is similar to the shared folder name in a Universal Naming Convention (UNC) path `\\ServerName\SharedFolderName`.

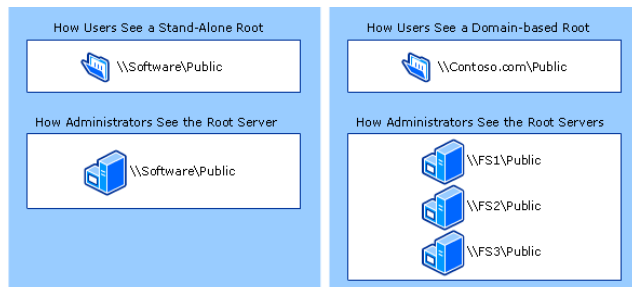
The following figure illustrates two namespaces as users would see them. Notice how the address format differs — one begins with a server name, Software, and the other begins with a domain name, Contoso.com. These differences illustrate the two types of roots: stand-alone roots, which begin with a server name, and domain-based roots, which begin with a domain name. Valid formats for domain names include `\\NetBIOSDomainName\RootName` and `\\DNSDomainName\RootName`.

### Examples of DFS Namespaces



A root can have one or more root targets. A root target, also known as a root server, is a physical server that hosts a namespace. A domain-based root can have multiple root servers to provide redundancy and high availability, whereas a stand-alone root can only have one root server. (Stand-alone roots created on server clusters provide high availability.) Root servers are transparent to users, who see only a single folder, whereas administrators can view the physical root servers by using the Distributed File System snap-in, the Dfscmd.exe command-line tool, or the Dfsutil.exe command-line tool (available as part of the Windows Support Tools). The following figure illustrates roots and root servers.

### Roots and Root Servers



Below the root, administrators can create multiple links. For example, if an administrator creates a link named Templates, users browsing the domain-based namespace shown above would see the path \\Contoso.com\Public\Templates. If an administrator wants to create a deeper hierarchy in the namespace, the administrator can use subfolder names in the link name, such as Templates\Presentations or Templates\Specs. Users who browse the namespace would see \\Contoso.com\Public\Templates. If the user opens the Templates folder, the user would see two subfolders: Presentations and Specs.

Each link can correspond to one or more link targets. A link target can be any UNC path. For example, a link target could be a shared folder (such as

\\NOAMFS3\Users), a folder underneath a shared folder, or a path to another DFS namespace (such as \\Contoso.com\Public\Users). Link targets are transparent to users but are visible to administrators by using the DFS tools.

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