Distributed File System, and Disk Quotas

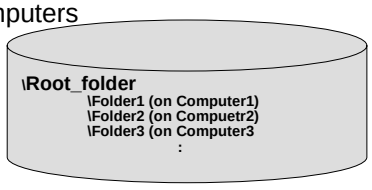
(Week 7, Thursday 2/21/2007)

Learning Objective

- Create a stand-alone Dfs structure with
  - a Dfs root
  - some Dfs links
- Enable and configure Disk Quotas

Distributed File System (Dfs)

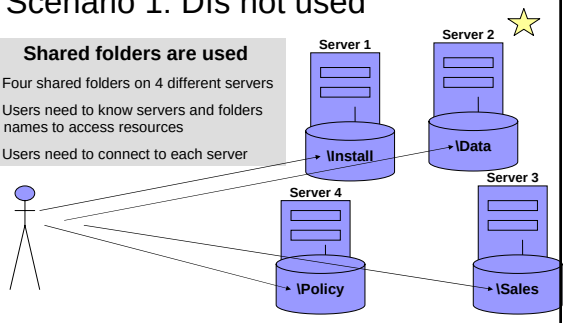
- A system that enables folders shared from multiple computers to appear as though they exist in one centralized hierarchy of folders instead of on many different computers



Scenario 1: Dfs not used

Shared folders are used

- Four shared folders on 4 different servers
- Users need to know servers and folders names to access resources
- Users need to connect to each server

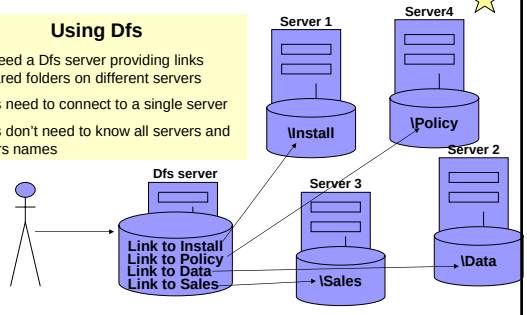


- Shared folders are not an effective solution if there are dozens of servers

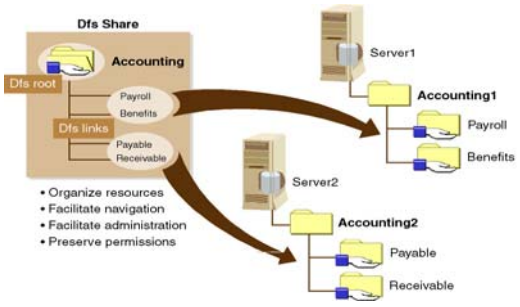
Scenario 2: Using Dfs

Using Dfs

- We need a Dfs server providing links to shared folders on different servers
- Users need to connect to a single server
- Users don't need to know all servers and folders names



Dfs implementation in Win 2003



Dfs Models

There are two Dfs models:

- Standalone Dfs
  - Created on standalone servers (Workgroup)
  - Dfs information stored on the local server
- Domain-Based Dfs
  - Created on a Domain controller or Member server (in a Domain)
  - Dfs information stored within Active Directory

Note: To implement either model, the DFS service needs to be started.

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Dfs Rules

- Windows 2000 Server 
  - Only 1 Dfs root per server is allowed
  - Dfs can be created on FAT or NTFS partitions
- Windows Server 2003 (Enterprise & DataCenter)
  - Multiple Dfs roots per server are allowed
  - Only NTFS partitions can host Dfs roots
  - Dfs clients must be running Dfs client software*

* Dfs Client software integrated in Win 2000 and Win XP, not in older Win versions

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Creating a standalone Dfs

1) Open the Distributed File System management tool (Start/All Programs/Administrative Tools/DFS)
2) Click **Action** menu, and then **New Dfs Root**
3) In the New Dfs Root Wizard, check **Create a standalone Dfs root**
4) Follow the instructions

- Once the Dfs root is created, you can right-click it and:
  - Create a new Dfs link
  - Check the status of the root folder
  - Hide the root (if needed for security reasons)
  - Filter the links (# of links to show, links you need to show, etc)

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Adding a Dfs link

1) Open the Distributed File System management tool
2) Right-click the root under the tree in the left pane
3) Click **New Dfs Link**
4) Follow the instructions

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Removing a Dfs link

1) Open the Distributed File System management tool
2) Right-click the link under the tree in the left pane
3) Click **Remove Dfs Link**
4) Click Yes.

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Set Dfs permissions

- NTFS permissions and shared folder permissions set on folders used in the Dfs structure apply

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Disk Quotas

- Disk Quotas needed because
  - Many users save data on shared folders
  - Users must be prevented from filling disk capacity
- Disk Quotas options
  - Enable Disk quotas w/o limiting disk usage
  - Set a default quota for all users (per-volume basis)
  - Set quotas on per-user basis

Note: Disk Quotas only available on NTFS partitions

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Enable/Configure Disk Quotas

1) Open My Computer
2) Right-click the volume, and click Properties
3) Click Quota tab
4) Enable quotas management
5) Configure Disk quotas

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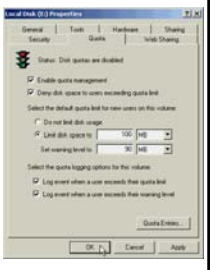
Disk Quota Parameters

- *Enable quota management:* Sets up quota management and starts tracking disk usage
- *Deny disk space to users exceeding quota limits:* Users can't write new information after reaching their quotas
- *Do not limit disk usage:* Tracks disk usage without imposing quotas
- *Limit disk space to:* Sets the default amount of disk space for all users



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Disk Quota Parameters (continued)

- *Set warning level to:* Sets the default disk space that users can occupy that will trigger a warning message
- *Log event when a user exceeds their quota limit:* An event is entered in the System log when a user reaches his or her quota
- *Log event when the user exceeds the warning level:* An event is entered in the System log when a user receives a warning that he or she is approaching the quota

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Delete a Quota entry

1) Open My Computer
2) Right-click the volume, and click Properties
3) Click Quota tab
4) Click the Quota Entries button
5) Right-click the appropriate user account
6) Click Delete

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Other slides:

- Configuring Auditing
- Taking ownership

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Configuring Auditing

- Auditing allows to keep track of events like Write, Create, Delete, Append, etc. on folders/files
- Need to implement auditing on folders and files that involve sensitive information (accounting, payroll, research projects, etc.)

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Configuring Auditing

1) Right-click the folder/file you want to audit
2) Click **Properties**
3) Click **Security** tab
4) Click **Advanced** button
5) Click **Auditing** tab in the **Access Control Settings** dialog box, and click **Add**
6) Double-click the group or user you want to audit
7) Check the Successful or Failed events to audit
8) Click OK as many times as needed.

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Taking ownership

Note: If you are the owner of a folder/file (or have the **Take ownership** permission), you can change other users' permissions

1) Right-click the folder/file you want to take ownership
2) Click **Properties**
3) Click **Security** tab
4) Click **Advanced** button
5) Click **Owner** tab in the **Access Control Settings** dialog box, and click **Add**
6) Change the ownership
7) Click OK as many times as needed.

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Summary Questions

1) The Computer Planning Committee at your company is working to project Windows Server 2003 disk capacity needs for the next two years, as part of the computer equipment budgeting process. Because you are part of the committee, they asked you if there is any way to gather statistics on present disk use over a three-month period to help in making projections. How can you obtain the statistics that they want?
   a) Turn on disk auditing for each user's account, and compile the audit report
   b) Set the default disk quota to a low number, and gather statistics based on the resulting reports that users are out of disk space
   c) Enable disk quotas, and after three months copy the disk quotas statistics into a file (e.g. spreadsheet or word processor file)
   d) There is no easy way to gather statistics except to ask all employees to calculate the space they use.

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Summary Questions

2) Which of the following are Dfs models that you can set up in Windows-based networks?
   a) Standalone
   b) Transitive
   c) Domain-based
   d) All of the above
3) Your assistant is attempting to set up a second Dfs root on a Windows 2000 server, but the New Dfs Root Wizard will not let him proceed. What is the problem?
   a) He did not reboot the server after creating the first Dfs root
   b) The first Dfs root must contain at least two Dfs links before a second Dfs root can be set up.
   c) Only one Dfs root can be created on a Windows 2000 server.

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Summary Questions

4) The management in your organization wants to limit all employees to 7 MB of disk space, on each volume, which they can use to store files in shared folders and in home folders. What is the best way you can accomplish this?
   a) Set up a default disk quota of 7 MB on each shared volume.
   b) Set up a disk quota for each user via the Active Directory.
   c) Set up a default disk quota of 7 MB for each user account on each volume.
5) Sara and Richard each have a disk quota of 2 MB. Recently Sara has taken ownership of an 800 KB database file previously owned by Richard. How does this action affect their disk quotas?
   5) When ownership of a file is transferred, that file is exempt from the disk quota allotment.
   6) The disk quotas of Sara and Richard are unchanged.
   7) Sara's disk quota is now 2.8 MB, but Richard/'s stays the same.
   8) Sara has 800 KB less space out of the 2 MB quota, and Richard has 800 KB more.

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Summary Questions

6) The lead research scientist in your company needs to work over the weekend to prepare information for a lecture he is presenting on Monday. He does not know how close he is to reaching his disk quota and is calling you to find out. How can you determine where he stands?

a) There is no way to determine where he stands, but you can increase her quota to make sure there is no problem.

b) Check the Quota Entries dialog box in the properties of the shared disk volume that he uses.

c) Open the Command prompt window and use the Quota command along with his account name to find out.

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