CNT 4603: System Administration Spring 2014

Managing Folder and File Security In AD

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- Resource sharing is a fundamental concept for a Windows Server 2008 network.
- Resource sharing is intended to increase the productivity of its users.
- The most frequently used resources on a server are folders (directories) and files, which might include written documents, spreadsheets, data files, databases, and multimedia files, etc..
- Some of these resources need to be kept secure because they contains sensitive information. Other resources are to be shared with limited groups to far-reaching audiences.
- Windows Server 2008 can securely protect folders and files or open them up to wide-scale sharing, depending on the need.

- Creating accounts and groups are the initial steps necessary to enable sharing resources. You will get some exposure to creating user accounts in a future project.
- The next step is to create Access Control Lists (ACLs) to secure these objects (folders and files) and to set them up for sharing.
- Windows Server 2008 has two types of ACLs: discretionary and system control.



- A discretionary ACL (DACL) is an ACL that is configured by a server administrator or owner of an object.
- For example, the server (system) administrator can configure who can access a company-wide shared folder containing personnel policies. Additionally, the human resources director may have their own folder of confidential information on the server that they might make available only to members of the Human Resources department. Because the HR director owns the folder, they can configure the folder's ACL to permit access to only members of their department.



- A system control ACL (SACL) contains information used to audit the access to an object.
- For example, a soft drink company decides to audit files that contain the secret recipes for their drinks. By configuring an SACL for each file that contains a recipe, the company monitors who has successfully viewed the file's contents and who has tried to view the contents, but failed because of DACL restrictions.
- When an SACL is not configured, this means that an object is not audited.
- The server administrator and object owners can configure DACLs and SACLs.



- Good security practices mean using DACLs and SACLs to protect the resources on your Windows Server 2008 network.
- The ACL-based object security techniques include the following DACL and SACL controls for folders and files:
 - Attributes
 - Permissions
 - Auditing
 - Ownership



- Windows Server 2008 continues to use attributes as defined in the NT file system (NTFS) and its predecessor File Allocation Table (FAT) file systems.
- Two basic attributes remain in the NTFS that are still compatible with FAT in older Windows operating systems: read-only and hidden.
- Both of these attributes are accessed form the General tab when you right-click a folder or file and click Properties, such as from Windows Explorer.

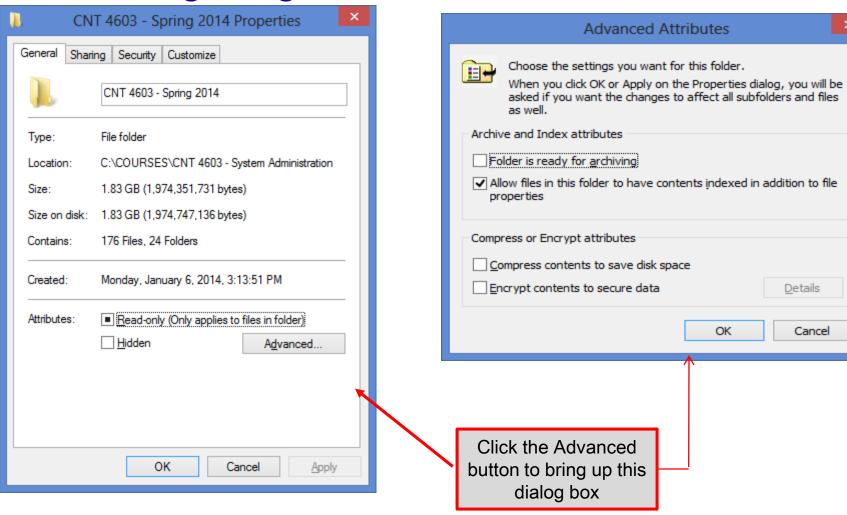


- When you check read-only for a folder, the folder is read-only, but not the files in the folder. This means the folder cannot be deleted from the command prompt (even though the folder attribute says "Only applies to files in a folder." (See page 10.)
- When a file is checked as read-only, it also cannot be deleted from the command prompt.
- Most Windows Server 2008 server administrators ignore the readonly attribute box and set the equivalent protection in permissions instead, because the read-only permissions apply to the folder and can be inherited by its files.



- Folders and files can be marked as hidden to prevent users from viewing their contents, which is a carryover from MS-DOS operating systems.
- The hidden attribute can be defeated by any Windows 98 and above client using Control Panel Folder Options to view hidden files and folders.
- The read-only and hidden attributes are on the General tab in an NTFS folder's or file's properties dialog box. In addition to these attributes, NTFS offers advanced or extended attributes, which are accessed by clicking the General tab's Advanced button (see page 10).







- The advanced attributes are archive, index, compress, and encrypt.
- When you make a change to an attribute in the Advanced Attributes dialog box in a folder's properties, you'll see a message box with the option to apply that change to only the folder and the files in that folder or to apply the change to the folder, its files, and all subfolders and files within the folder.



The Archive Attributed

- The archive attribute (Folder is ready for archiving see page 10)
 is checked to indicate that the folder or file needs to be backed up because it is new or changed.
- Most network administrators ignore the folder archive attribute, but instead rely on it for files. Files, but not folders, are automatically flagged to archive when they are changed.
- File server backup systems can be set to detect files with the archive attribute to ensure those file are backed up. The backup system ensures each file is saved following the same folder or subfolder scheme as on the server.



Index Attribute vs. Windows Search Service

- The index attribute and accompanying Indexing Service are legacy features for continuity with earlier operating systems, such as Windows Server 2000 and 2003.
- The NTFS index attribute (Index this folder for faster searching see page 10) is used to index the folder and file contents so that the file name, text, creation or modification date, author, and other properties can be quickly searched in Windows Server 2008.
- The index attribute marks a folder's contents or a specific file to be indexed through the Indexing Service. The Indexing Service creates a catalog of documents to be tracked and searched.



Index Attribute vs. Windows Search Service

- Windows Server 2008 offers a newer, faster search service called Windows Search Service.
- This service is meant to replace using the index attribute and the Indexing Service, and it is recommended that you use this replacement you can't use both the Windows Search Service and the Indexing Service at the same time.
- When you try Windows Search Service, you'll probably be surprised by its speed compared with the old Indexing Service.
- To use Windows Search Service, you must install the File Services role via the Server Manager. You'll do this in a later project.



Index Attribute vs. Windows Search Service

- Some files that are not conducive to searches, such as system files, are not included. These files are excluded to help reduce the size of the index catalog as a way to keep searches as fast as possible.
- Whenever you open a window, such as Windows Explorer, that has a Search box with a magnifying glass, you can use that box to perform a fast search using Windows Search Service.
- Also when a Windows XP, Vista, or 7 client searches for a file on Windows Server 2008, the Windows Search Service is used.
- Having fast client searches is a compelling reason alone for installing the File Services role in Windows Server 2008. This makes users more productive and reduces time using the network that connects to a server.

The Compress Attribute

- A folder and its contents can be stored on the disk in a compressed format, which is an option that enables you to reduce the amount of disk space used for files. This is particularly useful in situation in which disk space is limited or for folders that are accessed infrequently.
- Compression saves space and a user can work on a compressed file in the same manner as an uncompressed one.
- The disadvantage of compressed files is increased CPU overhead to open the files and to copy them. On a busy server, this can be a serious consideration. Furthermore, you cannot execute a compressed program file.



The Compress Attribute

- When you compress a folder, you have the option to compress the folder, its subfolders, and files in the folder.
- When you add new files to a folder marked with the compress attribute, the new files are compressed automatically.
- By default, compressed files and folders are displayed in colored font, such as blue. If they are not displayed in color, you can turn this feature on.

WARNING

If you are concerned with security and want to use the encrypt attribute, do not compress files because compressed files cannot be encrypted.



The Encrypt Attribute

- The NTFS encrypt attribute protects folders and files so that only the user who encrypts the folder or file is able to read it.
- As a server administrator, you might use this option to protect certain system files or new software files that you are not ready to release for general use.
- In an organization with sensitive file contents, encryption can be an essential security measure.
- It is also good business practice to encrypt stored files vital to business strategy or containing company secrets.



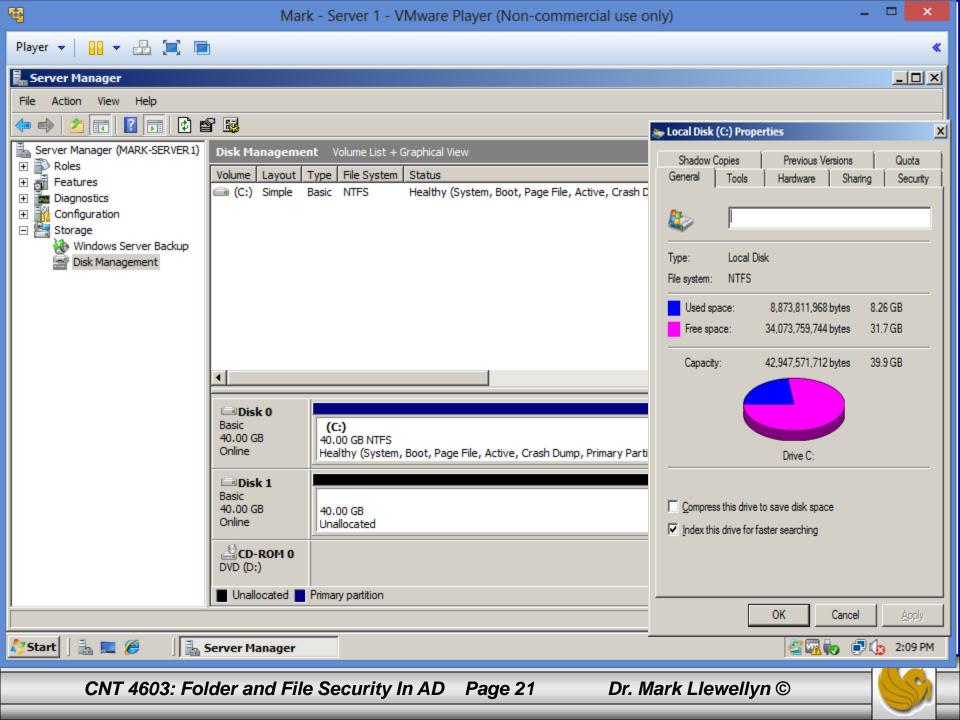
The Encrypt Attribute

- An encrypted folder or file uses the Microsoft Encrypting File System (EFS) which sets up a unique private encryption key associated with the user account that encrypted the folder or file.
- The file is protected from network intruders and in situations in which a server or hard drive is stolen.
- EFS uses both symmetric and asymmetric encryption techniques.
- The symmetric portion uses a single key to encrypt the file or folder.
- In the asymmetric portion, two encryption keys are used to protect the key for encrypting the file or folder. Because the asymmetric portion is connected to a user account, the account should have a strong password to help ensure that attackers can't guess it easily.

Dynamic Volume Management

- Dynamic Volume Management enables you to create, change, or mirror volumes without rebooting, by using dynamic storage and disks.
- A dynamic disk has a single partition within which you can create volumes.

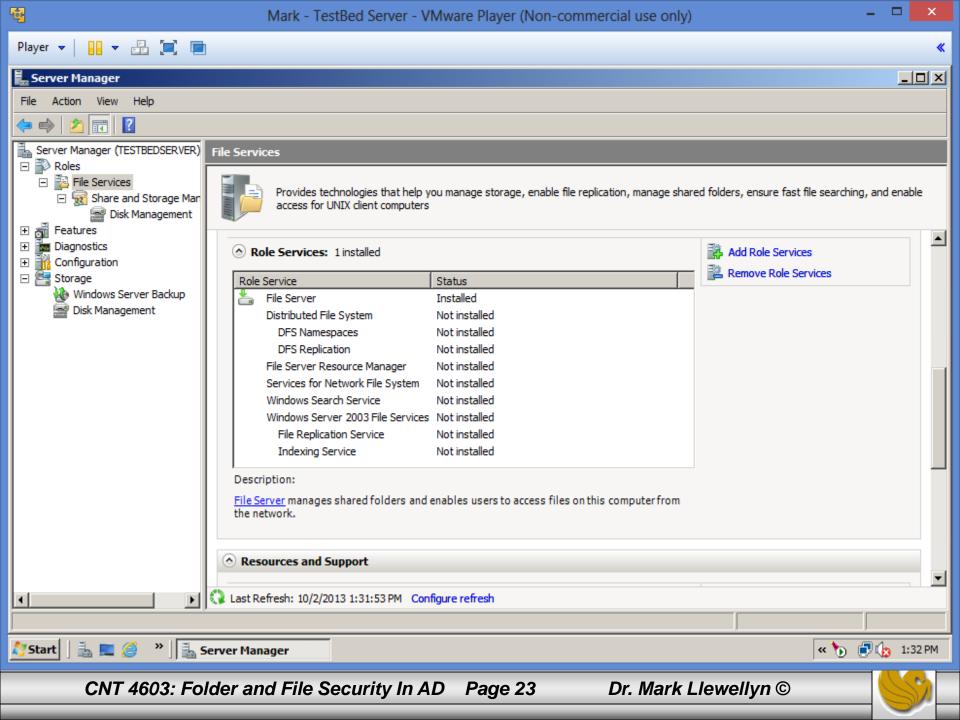




Distributed File System (DFS)

- The Distributed File System (DFS) provides for the creation of a directory, called a namespace, that spans several file servers and allows users to easily search and locate files or folders distributed over the network.
- DFS can be either part of a workgroup or an Active Directory domain, wherein spreading the information across several domain controllers provides a degree of fault tolerance..





Windows Server Backup

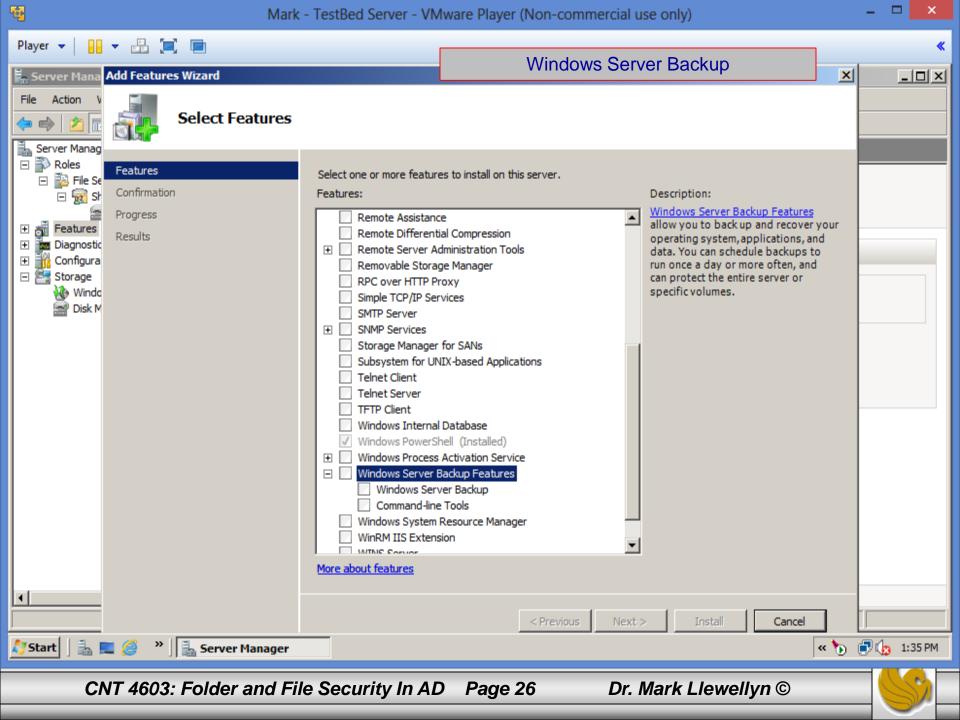
- Server 2008 introduced a new backup solution that has been designed specifically for smaller organizations, which is indicated by its redesigned architecture and options for an organization.
- In the early days of backup, you could only back up to tape. Then the capability to backup to media was added, in addition to tape support. Server 2008 allows back up to only media, including DVDs and external drives.
- This is a big shift, and Microsoft's explanation on the removal of tape drive support is that it found that customers who used tapes for back up use third-party back up solutions. So they wanted to better tailor the back up applications to those who use the in-product backup solution: smaller organizations.



Windows Server Backup

- WSB is a feature, which is installed via the Server Manager. There are two subcomponents. The main WSB component contains the core WSB graphical and CLI environments. The Command-Line Tools component contains a script for managing backups via PowerShell.
- This is illustrated on the next slide.

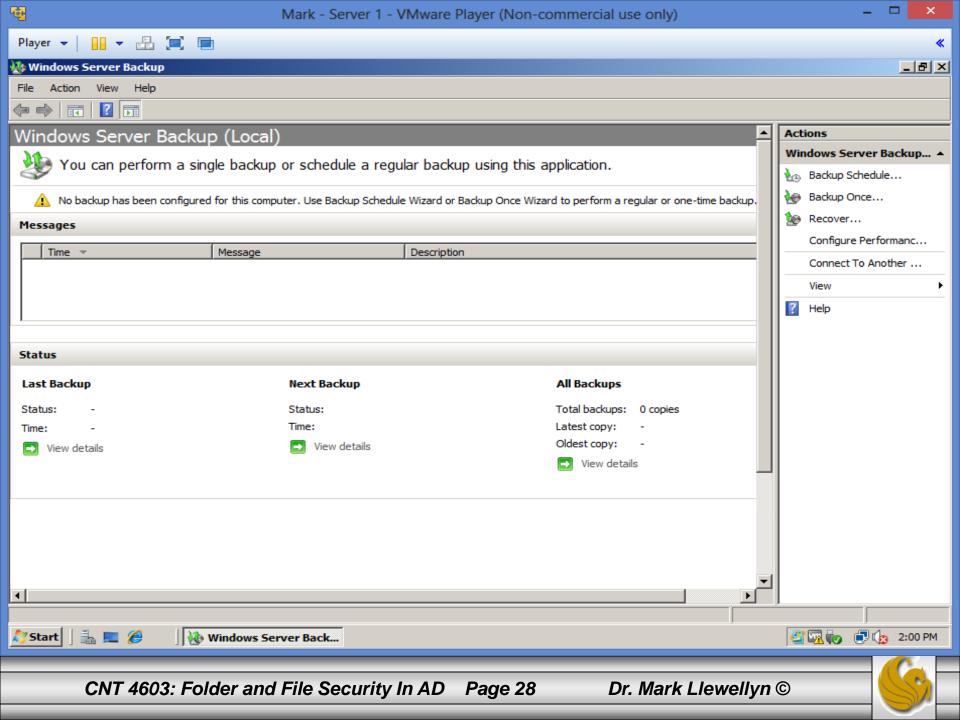


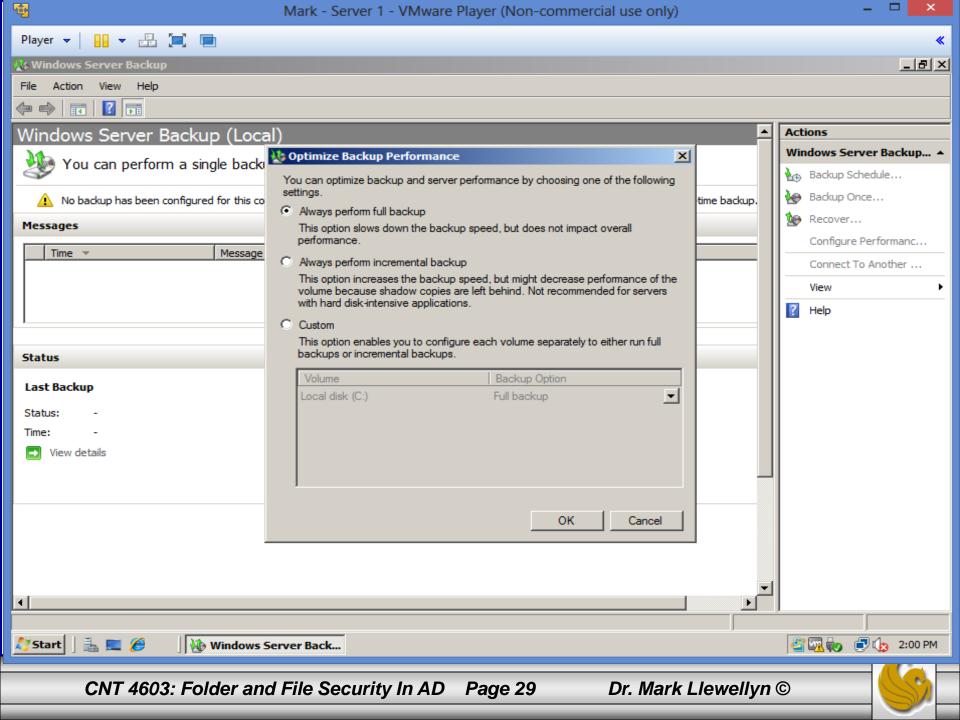


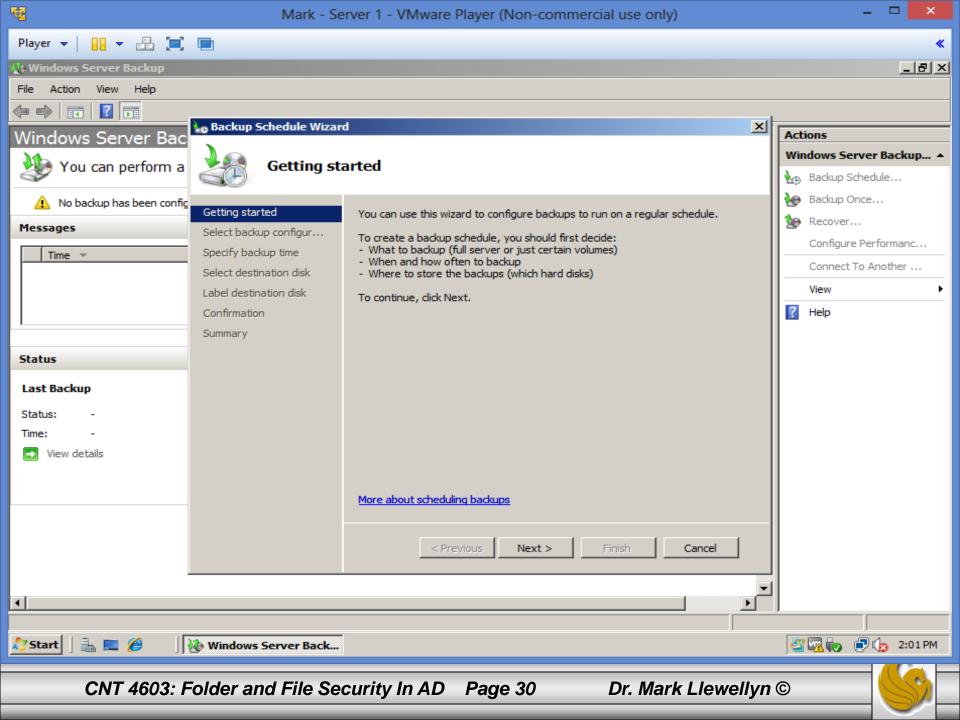
Windows Server Backup

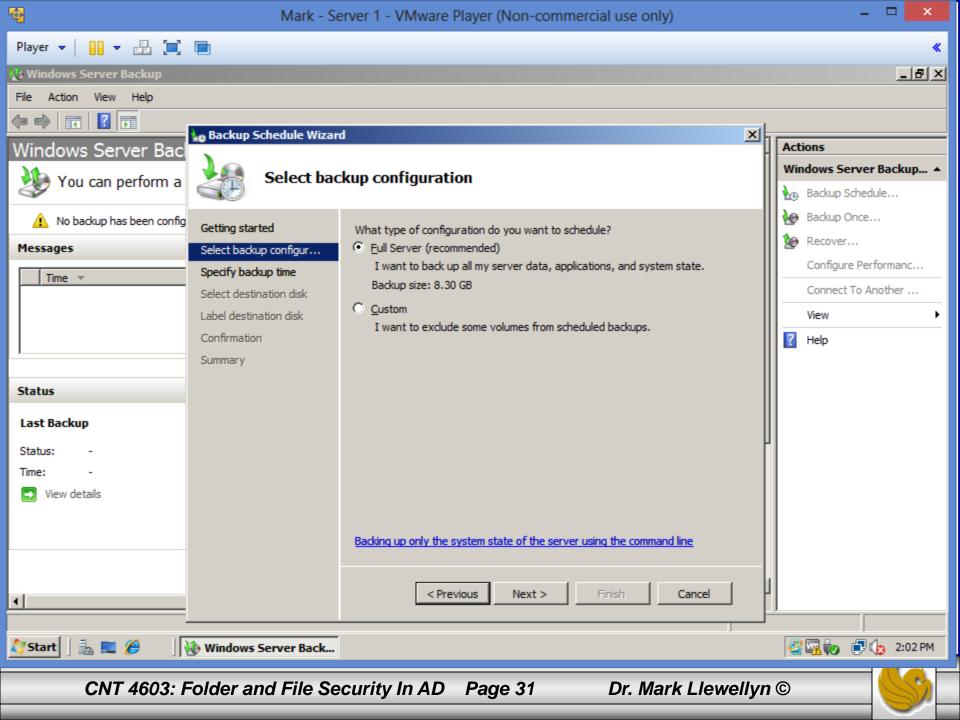
- Performing a backup is simple, which is the point behind WSB.
- You must be an administrator or a member of the backup operators group to perform a backup.
- To switch between performing a full or incremental backup, use the Configure Performance Settings action within WSB. Additionally you can select different types of backup for each volume if required. This is shown on the next page.

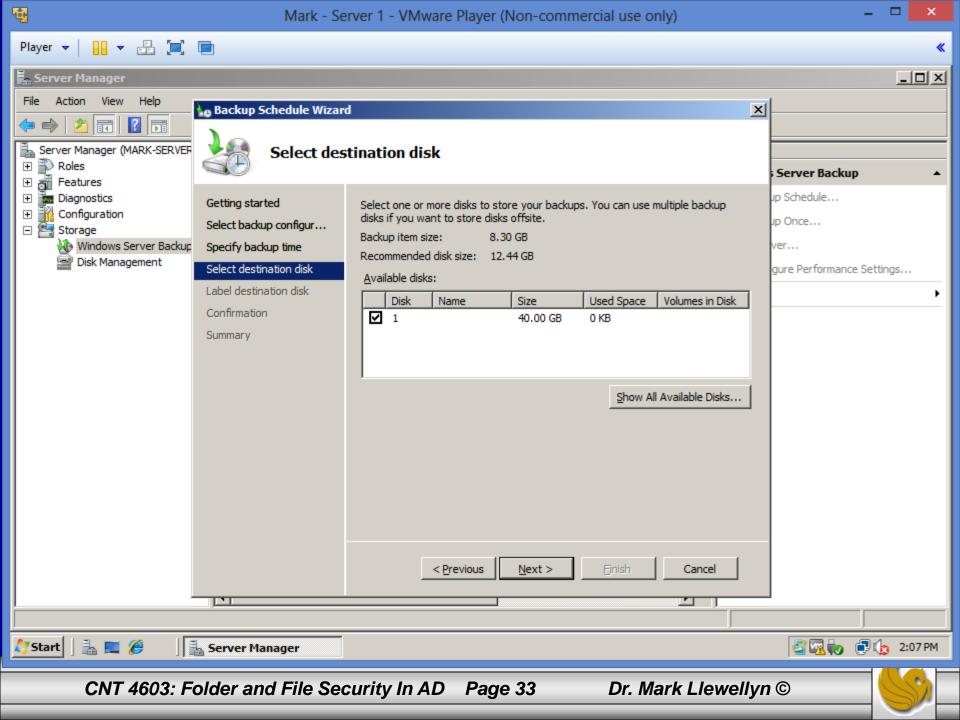


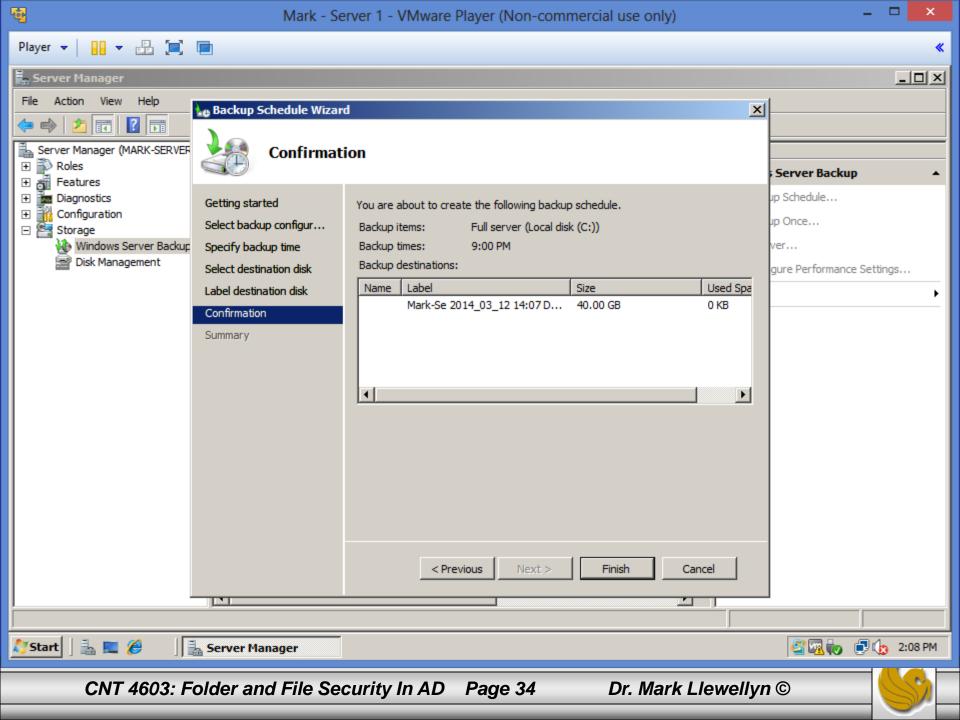


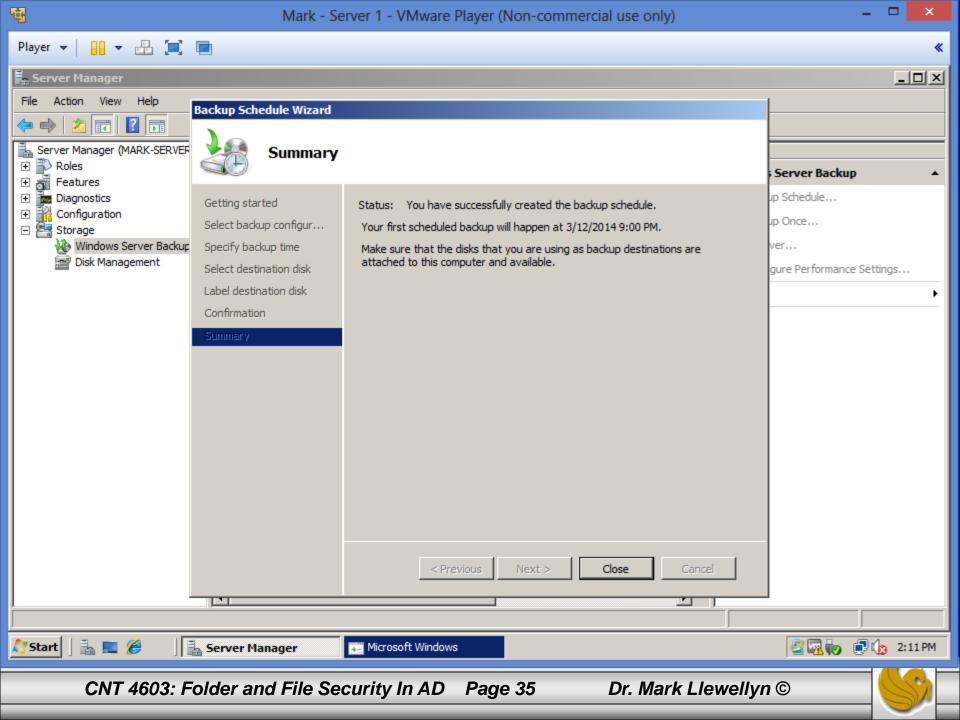


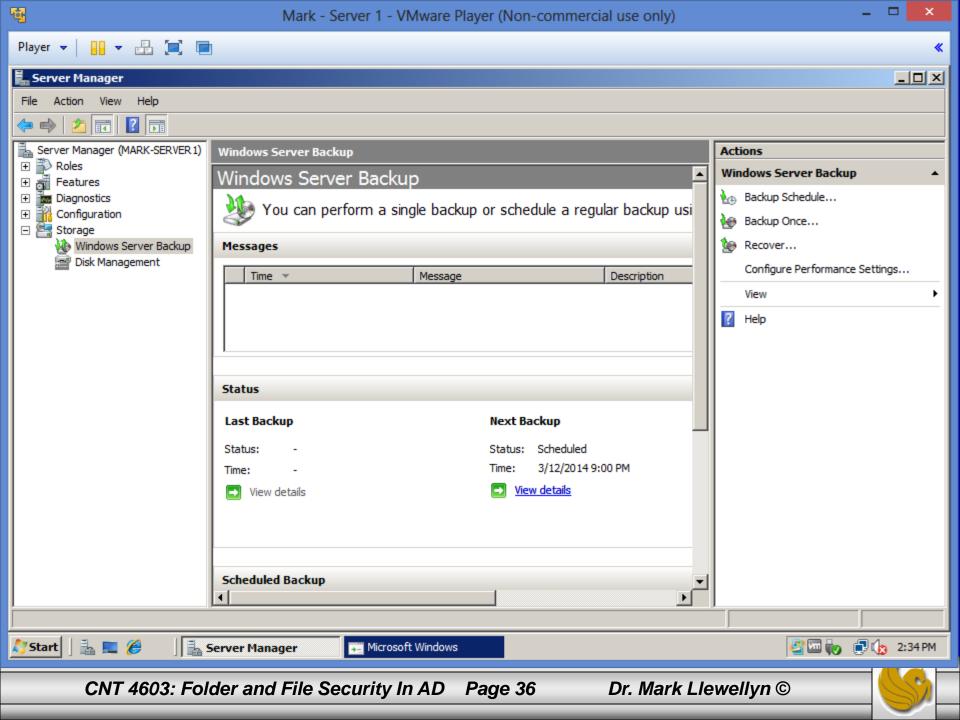












File Server Resource Manager Tools

- On a Windows Server 2008/2012 server with File Services installed as a role (also on servers without this role), the File Server Resource Manager tool is a file system management and reporting configuration tool designed for system administrators.
- This too first appeared in Server 2003 R2 and provides SAs the ability to configure quota management at the volume and folder level, create and apply file screening policies, generate alert notifications and reports on a schedule and in real time, and classify folders and files based on administratively defined criteria.
- FSRM can be used to set limits on storage amounts allocated to users or groups of users (group level policy implementations).
- FSRM also allows for the enforcement of policies by creating reports and generating notifications of policy violations.

