CSIS 2260 Winter 2021

Lab 7– Due March 11 @ 4 PM

Windows Server 2016 - configuring local storage and File and Share Access

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A. Configuring Local Storage [_____/6]

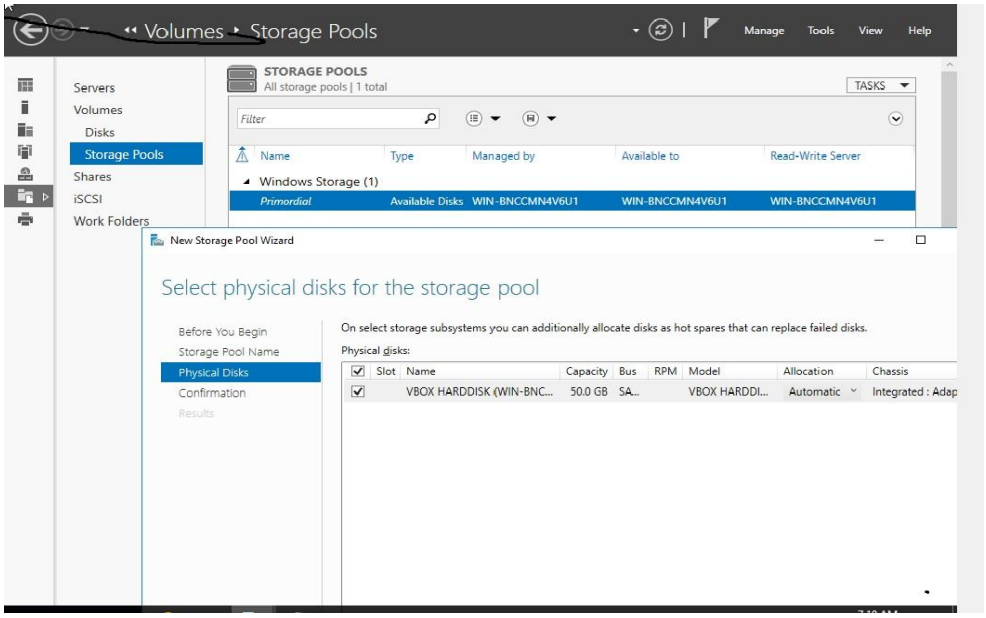
Storage Spaces is a disk virtualization technology that enables a server to concatenate storage space from individual physical disks and allocate that space to create ***virtual disks*** of any size. Storage Spaces uses **unallocated** disk space on server drives to create ***storage pools***. A storage pool can span multiple drives invisibly, and by using the space in the pool, one can create virtual disks of any size. A virtual disk behaves much like a physical disk except that the actual bits might be stored on any number of physical drives in the system. Virtual disk can also provide fault tolerance by using physical disks in storage pool to hold mirrored or parity data.

Disk mirroring writes same data to identical volumes on two different disks and is one of the simplest forms of fault tolerance to implement and manage, but it is also one of the more expensive solutions.

On one of the machines, do the followings.

1. Shrink a Volume
   In *Server Manager* window, click *Tools* > *Computer management* > *Disk Management.* Right click on C:\ and **shrink** the C: drive by reducing its space by 20 GB. Leave the rest of the drive as unallocated.

2. Creating Storage Pool and Virtual Disk
   a. Using *Server Manager* > *File and Storage Services* > *Storage Pools*, TASKS, select Rescan Storage, right click on the *primordial* space to create a new storage pool called *pool1*. Select one disk into the storage pool and set *Allocation* as *Automatic*.



What is the *Total selected capacity*? **19.5GB** click Next, click Create

b. Create a new simple volume, select pool1, VIRTUAL DISKS -> TASKS select New Virtual Disk, *virtual1*, by using the maximum available capacity. Using NTFS as the file system.

What is the available capacity? **18GB**

c. Use *Disk Management* to check the number of disk and disk space available on the system. Also use file manager to see if you have the two volumes created.

Drive letter **C:** Size **29.98GB**

Drive letter **E:** Size **17.87GB**

B. File and Share Access [_____/6]

Server-based file shares provide users with a simplified data storage solution that they can use to store their files, share files with other users, and easily locate the files shared by their colleagues. Server-based storage tools can be used to protect everyone's files, regulate access to sensitive data, and prevent users from abusing their storage privileges.

1. Folder sharing using File Explorer
   a. Use *File Explorer* to create a folder *Test* under the user *Administrator*.
   b. Share the folder *Test* with everyone with *Read* permission by right click on the folder, select *Share with* > *Specific people*, and from the pop-up window, click the down arrow on right of the box at the center, select *Everyone* and click *Add*. You will see *Everyone* has been added with *Read* as the default permission. Click *Share* at the bottom of the pop-up window.

c. Create a subfolder *test1* under the folder *Test*.
d. Using Ctrl-Alt-Del, switch to user *student1*. Can you access the folders *Test* and *test1*? **Yes after I added student1 to print operators**
e. Can you create a folder under *test1* **without** the admin password? **No**
f. Sign out from *student1* and switch back to the *Administrator* account.

2. Install the *Server for NFS* role service
   a. From the *Server Manager*, click *Manage > Add Role and Features*.
   b. At *Server Roles*, click the drop-down arrow of *File and Storage Services > File and iSCSI Services*, then check the *Server for NFS*. Click *Add features* when prompted.
   c. Take the defaults for the rest and click *install*.
   d. Wait for the installation to complete.

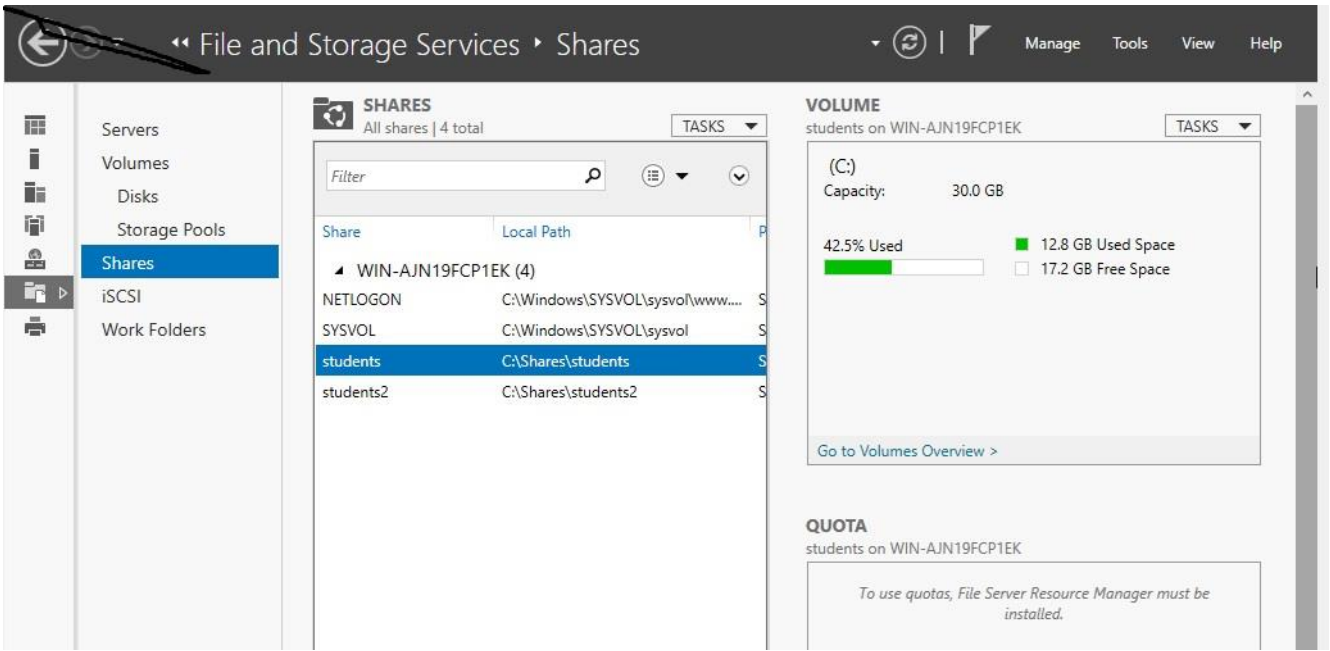
3. Create a folder *students* under C:
4. Create a Folder Share
   a. Click *Server Manager > File and Storage Services > Shares*. Select *Tasks > New Share*.
   b. From the New Share Wizard window, look at the descriptions for *SMB Share – Quick* and *NFS Share - Quick* by clicking on them. What is the main difference between SMB and NFS share? **SMB is for Windows-based computers while NFS is for UNIX-based computers**

      Note that Server Message Blocks (SMB) is the file-sharing protocol used by all versions of Windows.

   c. Select *SMB Share – Quick* and click *Next*.
   d. Use ***C:\Shares*** as the *Share location*, and *students* as the Share name.
   e. Select *Enable access-based enumeration* and *Allow caching of share*.
   f. Take the defaults for the rest and click *Create*.
   g. Close the pop-up window when the share was successfully created.

C. Assigning Permissions **[_____/8]**

1. Assigning Read/Write permission of the folder *students* to user *student1*.
   a. Click *Server Manager > File and Storage Services > Shares*. Select *students* in *Shares*. Right click, then select *Properties*.
   b. Click *Permissions > Customize permissions … > Add > Select a principal >Advanced*
   c. Set Object Types as *Users*, click *Find Now*, and select *student1* and click *OK*.



What are the default permissions shown?

Read & Execute, List folder contents, Read

d. Click *Show advanced permissions* on the right.

What are the default permissions shown?

Traverse folder/ execute file, list folder / read data, read attributes, read extended attributes, read permissions

e. Go back to *Basic permissions* and add in ***Write*** permission by checking the box on the left. Click *Show advanced permissions*.

What are the addition permissions shown?

Create files/ write data, create folders /append data, write attributes, write extended attributes

Is Delete subfolders and files allowed?

If you click on it, yes

f. Close the *Permission Entry for students* pop-up window by clicking *OK*.

2. Removing Special Access

a. From the *Advanced Security Settings for students* window > *Permissions*, select the entry for *Users* with *Special* Access. Click view and Show advanced permissions. What are the permissions given?

Create files/ write data, create folders/ append data

b. Close the Permission pop-up window. From the *Advanced Security Settings* window, try to remove the Special Access. What is the message displayed on the screen?

You can't remove Users (CSIS\Users) because this object is inheriting permissions from its parent. To remove Users (CSIS\Users), you must prevent this object from inheriting permissions. Turn off the option for inheriting permissions, and then try removing Users (CSIS\Users) again.

c. Click *Disable inheritance* and convert inherited permissions into explicit permissions. Try to remove the *Special* Access. Is the removal successful?

Yes

Close all the pop-up windows.

3. Use the file explorer to add a subfolder *Adminsub1* under folder *students*. Switch to user *student1*.

a. Can you delete the subfolder *Adminsub1* without the admin password? No

b. Under folder *students*, create a subfolder *sub1*.

c. Switch to user *student2*. Can you create a subfolder *sub2* under folder *students* without the admin password?

Yes

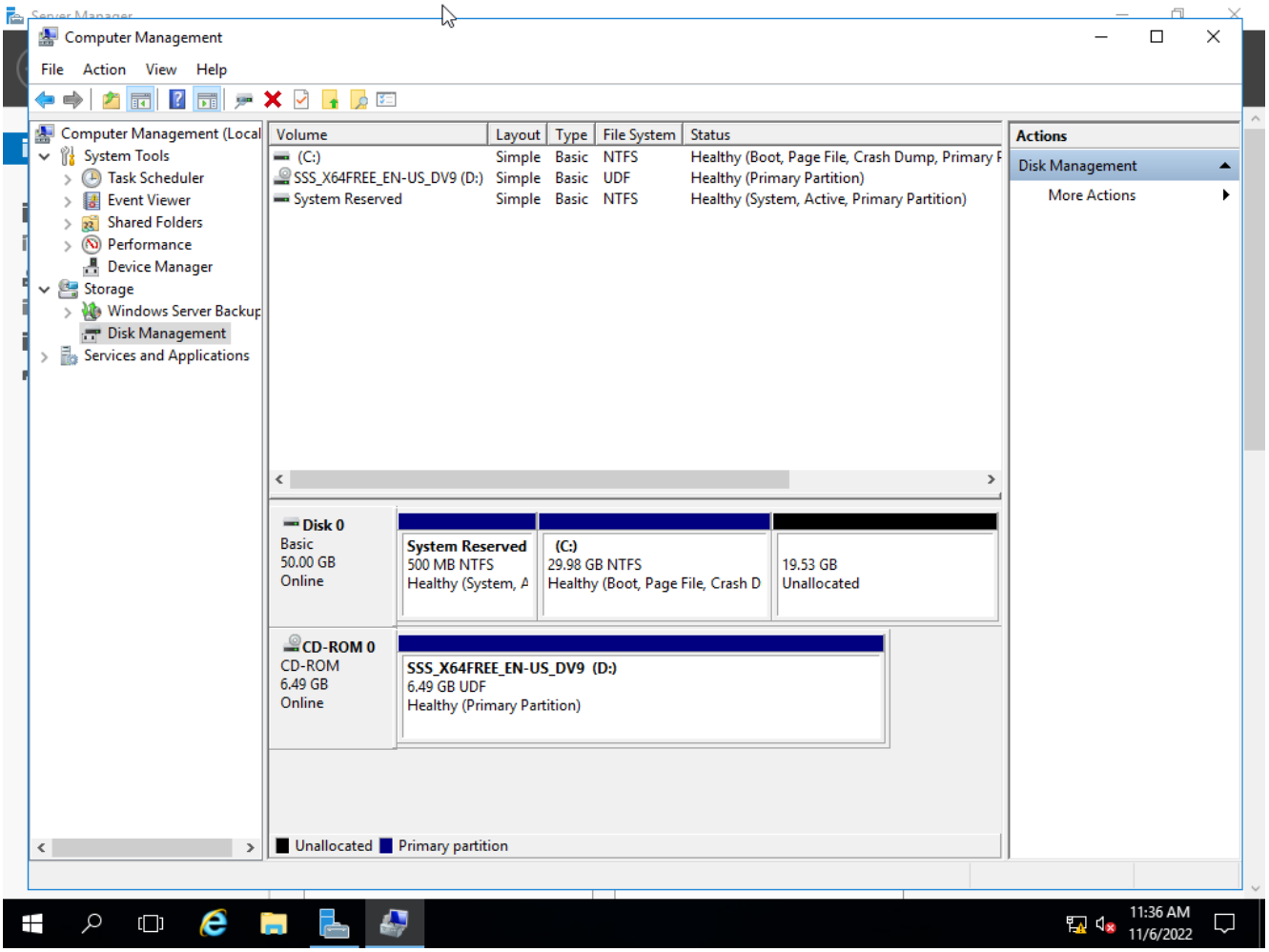
d. Can you delete the subfolder *sub1*?

No

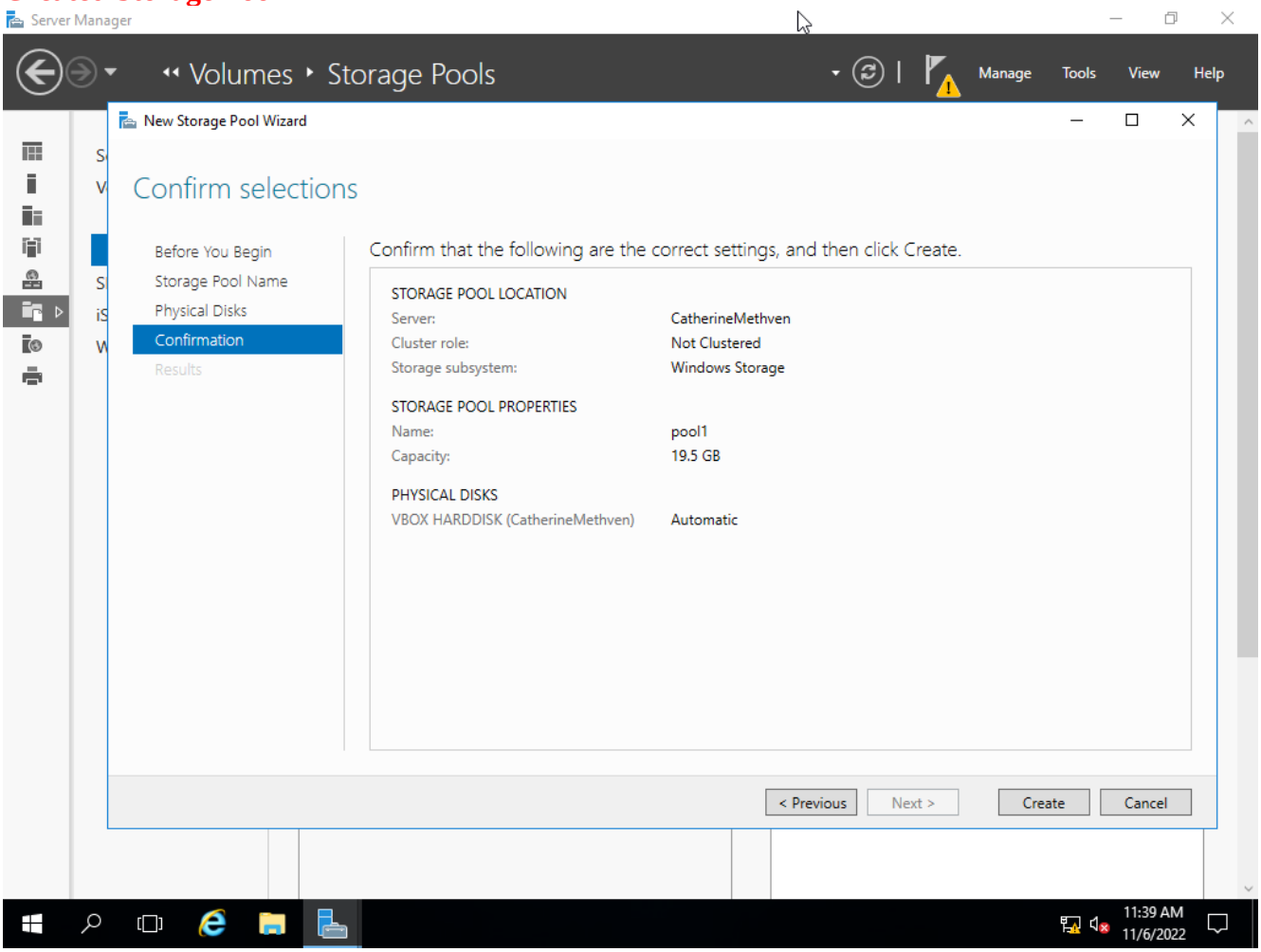
e. Sign out from *student2* and switch back to user *student1*. Can you delete the subfolder *sub1*? **Yes**

Do screen prints and submit as FirstName_Student#_Lab7 in Blackboard

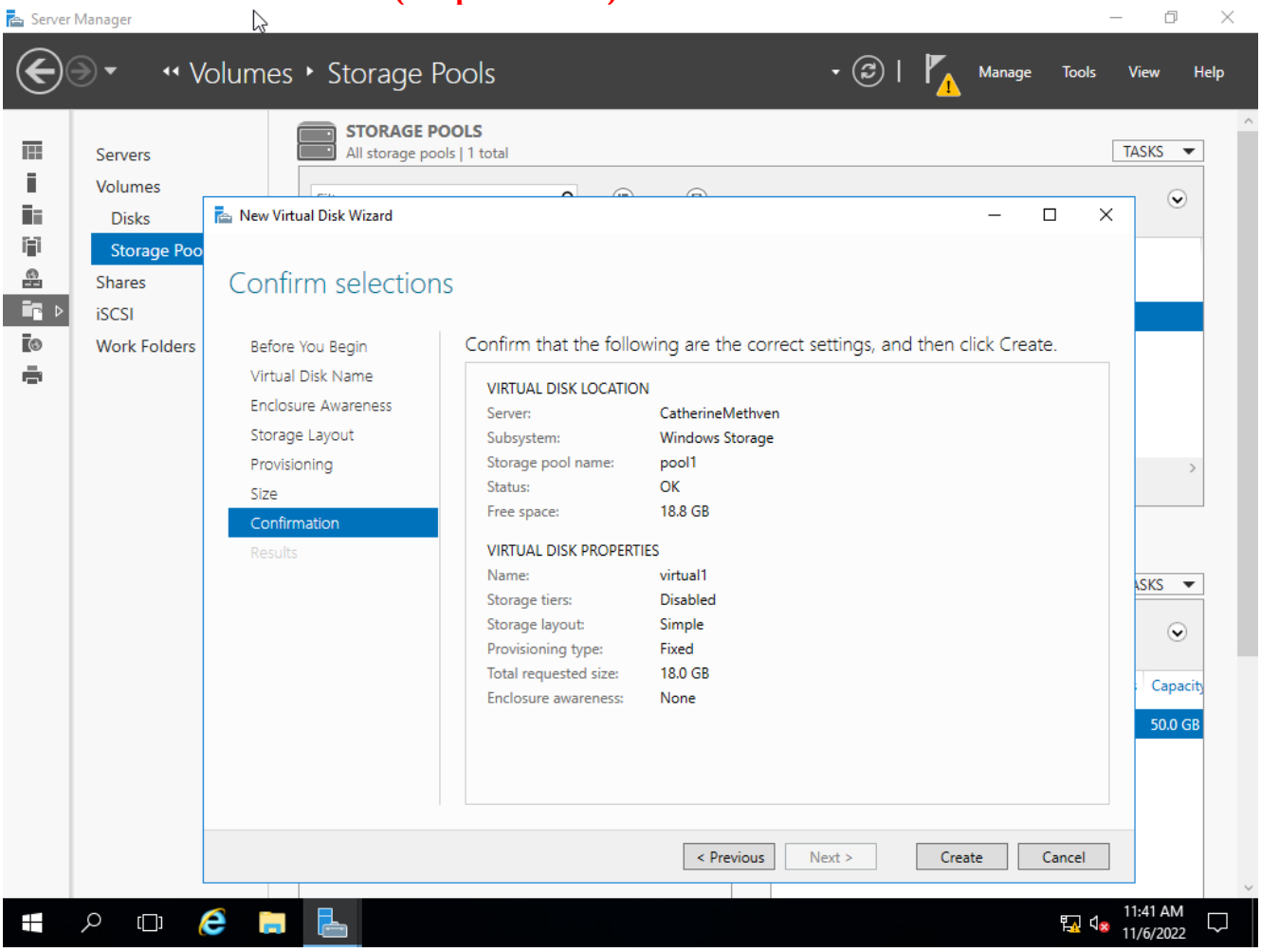
Shrink Volume C:



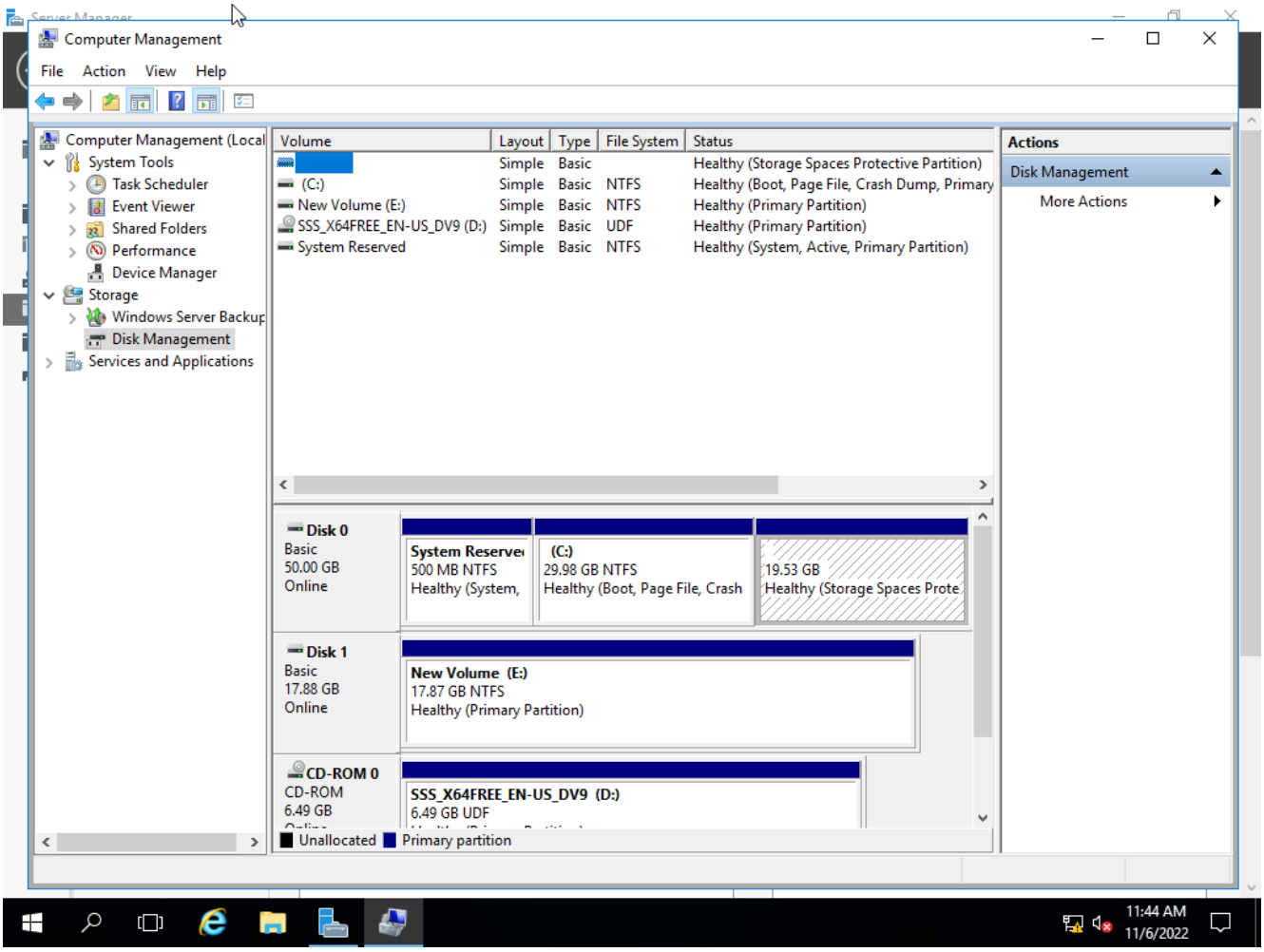
Created Storage Pool1



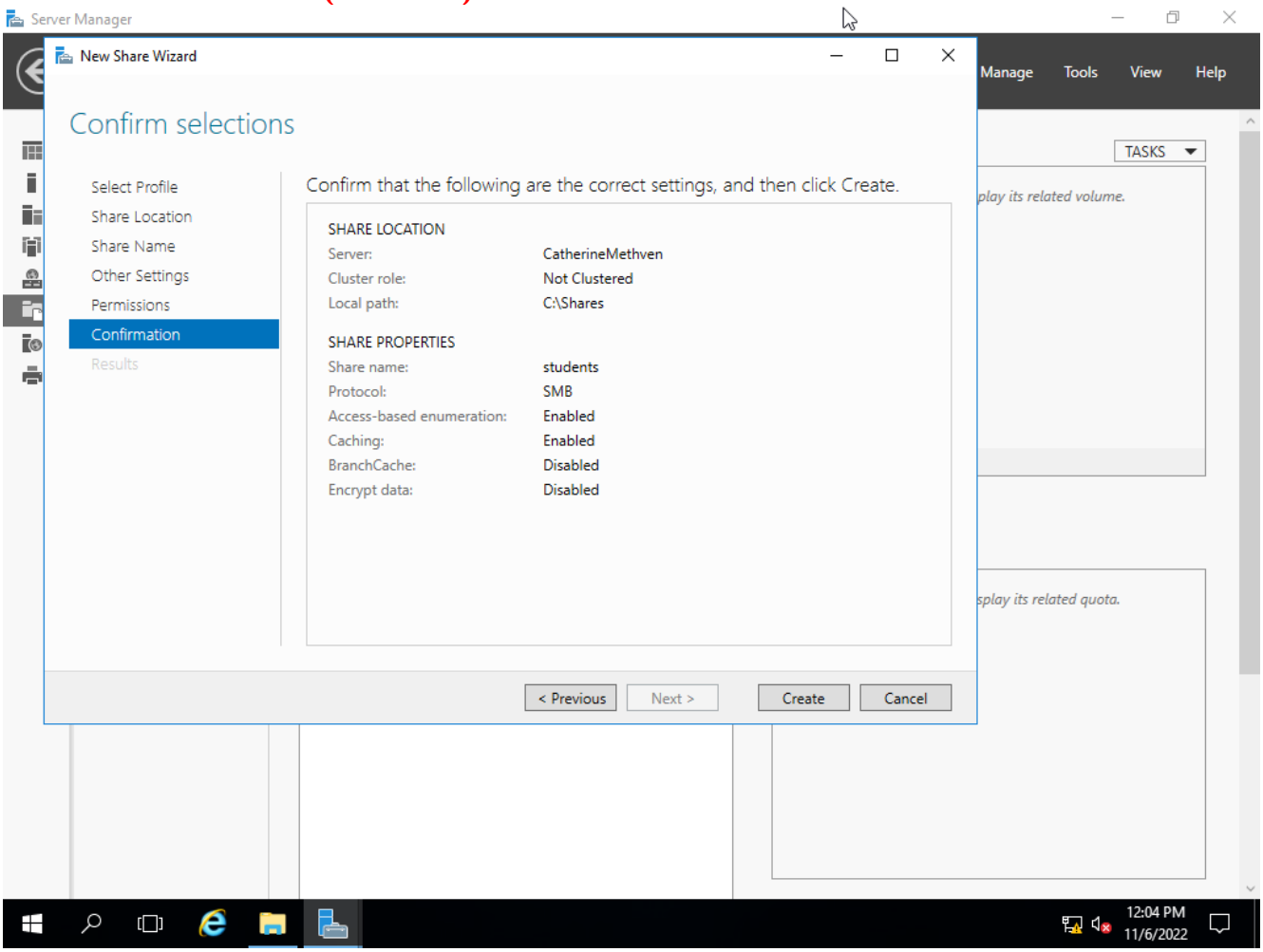
Created Virtual Disk virtual1 (Simple & Fixed)



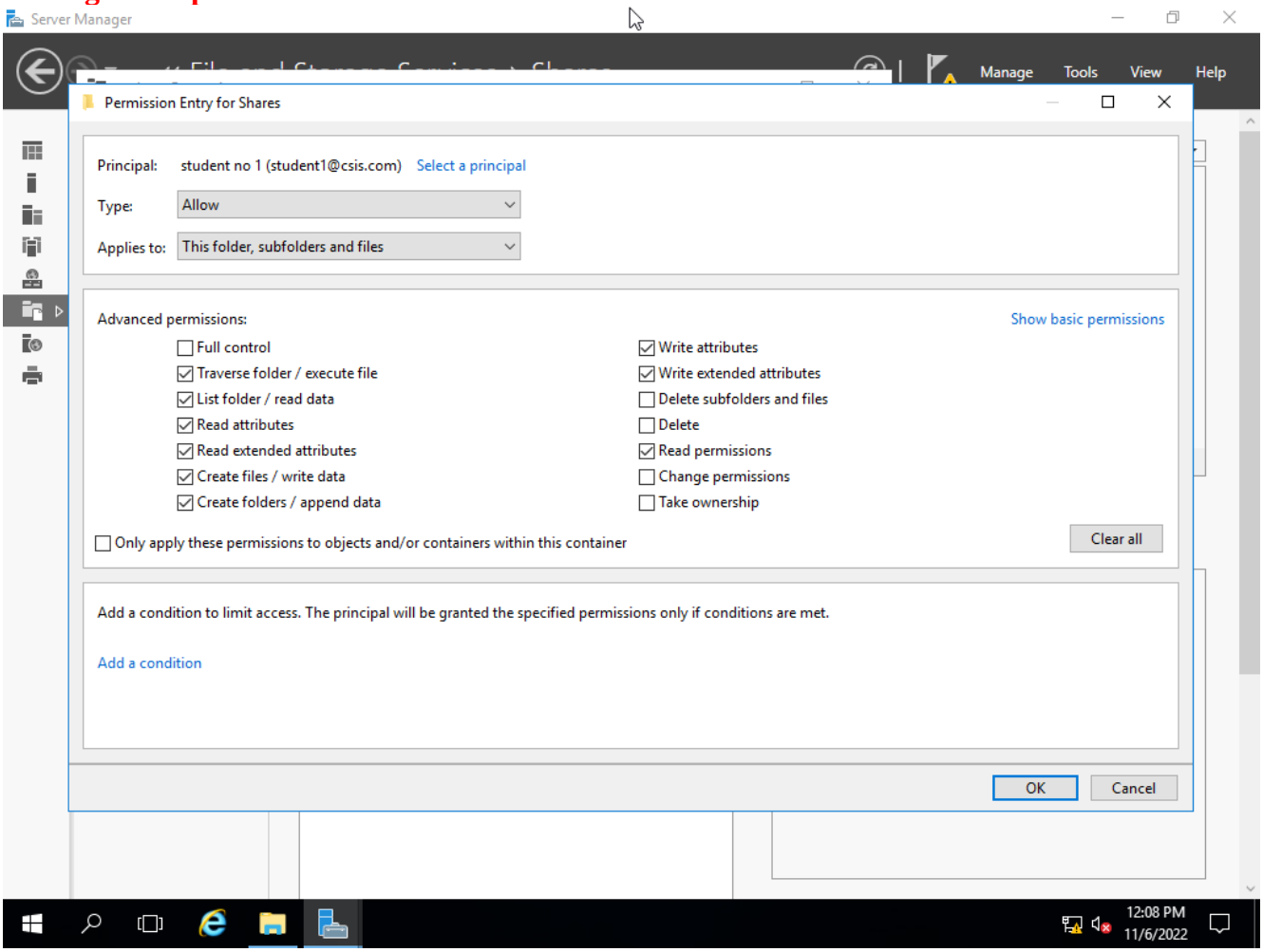
View from Disk Management demonstrating new volumes C: and E: as well as Storage Spaces use



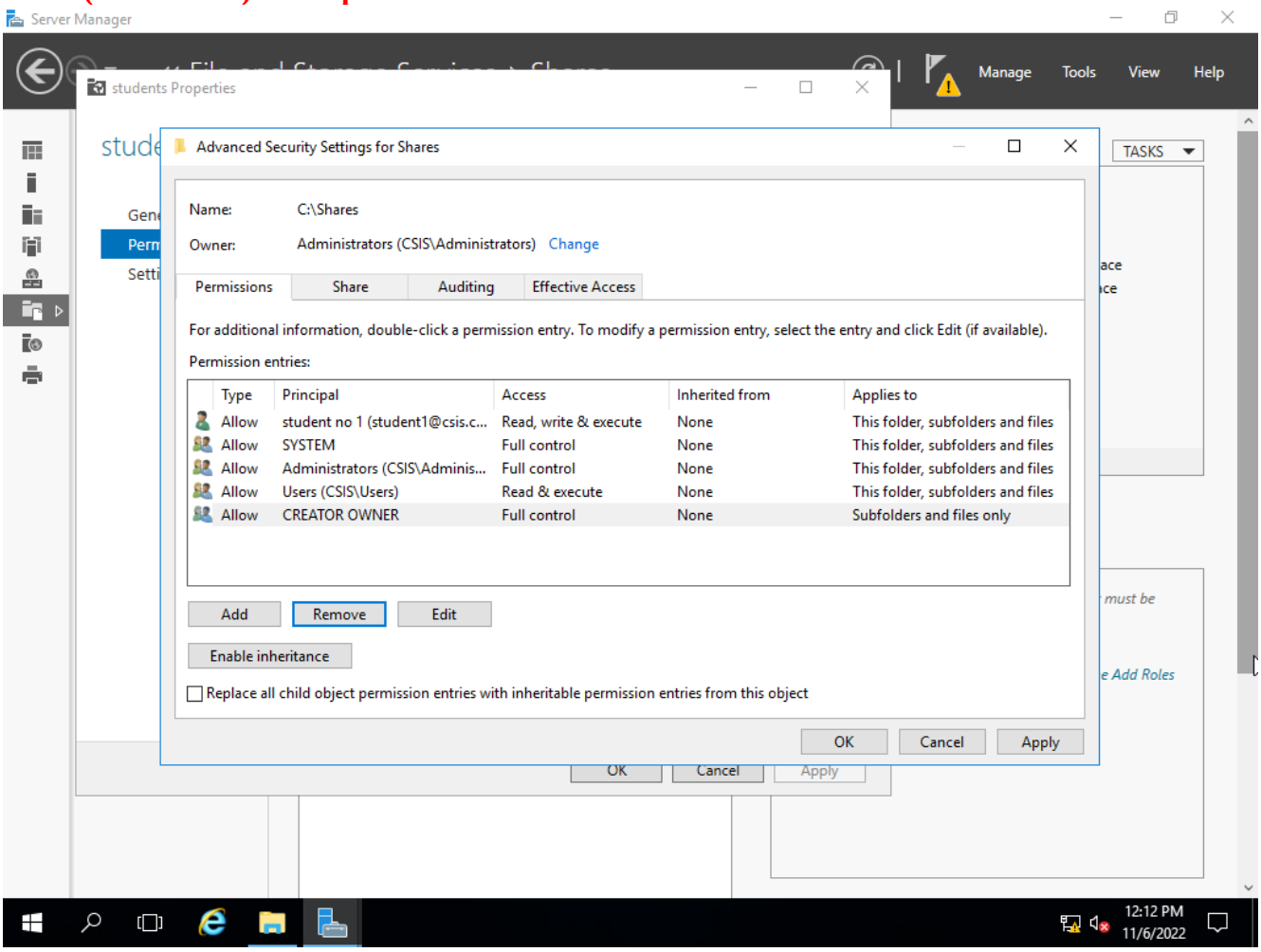
Created a Shared folder (C:\Shares) for users to access



Adding Write permissions for student1



Users (CSIS\Users) with Special Access has been removed from C:\Shares



Student1 is able to delete the folder they created in C:\Shares (sub1) but is unable to delete the folder created by Student2 in C:\Shares