LAB 8
CREATING AND CONFIGURING VIRTUAL MACHINE STORAGE

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This lab contains the following exercises and activities:

Exercise 8.1	Creating a Virtual Hard Disk
Exercise 8.2	Editing a Virtual Hard Disk File
Exercise 8.3	Creating a Virtual Machine with an Existing Virtual Hard Disk
Exercise 8.4	Configuring QOS on a Virtual Hard Disk
Exercise 8.5	Creating a Pass-Through Disk
Lab Challenge	Creating a Checkpoint

BEFORE YOU BEGIN

The lab environment consists of three servers connected to a local area network, one of which is configured to function as the domain controller for a domain called *adatum.com*. The computers required for this lab are listed in Table 8-1.

Table 8-1
Computers Required for Lab 8

Computer	*Operating System*	*Computer Name*

Domain controller 1	Windows Server 2016	SERVERA
Member server 2	Windows Server 2016	SERVERB
Member server 3	Windows Server 2016	SERVERC

In addition to the computers, you also require the software listed in Table 8-2 to complete Lab 8.

Table 8-2
Software Required for Lab 8

Software	***Location***
Lab 8 student worksheet	Lab08_worksheet.docx (provided by instructor)

Working with Lab Worksheets

Each lab in this manual requires that you answer questions, take screen shots, and perform other activities that you will document in a worksheet named for the lab, such as Lab08_worksheet.docx. It is recommended that you use a USB flash drive to store your worksheets, so you can submit them to your instructor for review. As you perform the exercises in each lab, open the appropriate worksheet file, fill in the required information, and save the file to your flash drive.

After completing this lab, you will be able to:

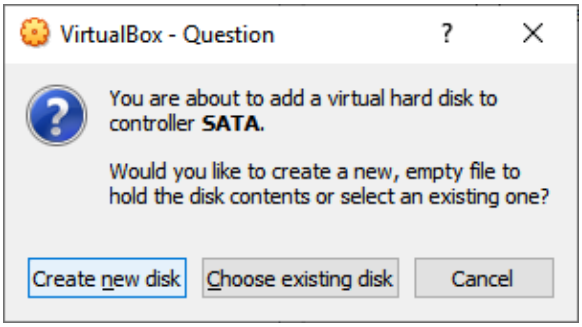
- Create and edit VHDxs
- Create VM with existing VHDx
- Configure QOS on a virtual hard disk
- Create a pass-through drive
- Create a checkpoint

Estimated lab time: 50 minutes

Exercise 8.1	Creating a Virtual Hard Disk
Overview	In this exercise, you use the Hyper-V Management console to create a new virtual hard disk.
Mindset	What hardware options are available when creating virtual hard disks in Hyper-V?
Completion time	10 minutes

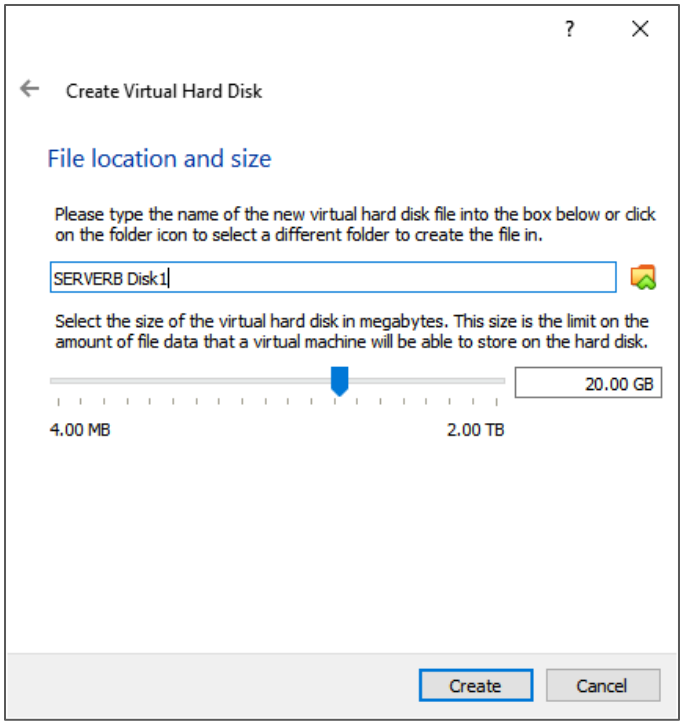
Before starting SERVERB, create 3 virtual disks in VirtualBox SERVERB settings.

SERVERB > Settings > Storage > “Add hard disk” icon 



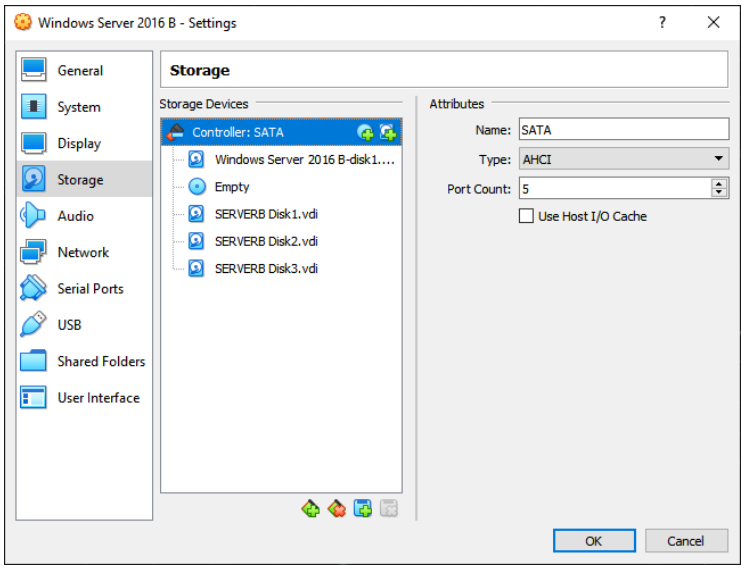
Click “Create new disk”.

Keep default settings “VDI” and “Dynamically allocated”.



I like to name it as “SERVERB Disk1” to distinguish it from other virtual hard disks.

Similarly, create “SERVERB Disk2” and “SERVERB Disk3”, set size to 20GB as well. After creating three additional virtual disks, your storage setting look like the following picture.



After creating three virtual disks, start SERVERB.

1. On the **SERVERB** computer, which has the Hyper-V role installed, open the Server Manager console and select **Tools** > **Hyper-V Manager**. The Hyper-V Manager console appears.

2. In the left pane, click SERVERB, and then in the right pane, click **New** > **Hard Disk**. The New Virtual Hard Disk Wizard appears, displaying the *Before You Begin* page.

3. Click Next. The *Choose Disk Format* page appears.

Question 1	*Under what conditions might it be necessary to create a VHD file rather than a VHDX file?*

4. Click Next to accept the default VHDX value. The *Choose Disk Type* page appears (see Figure 8-1).

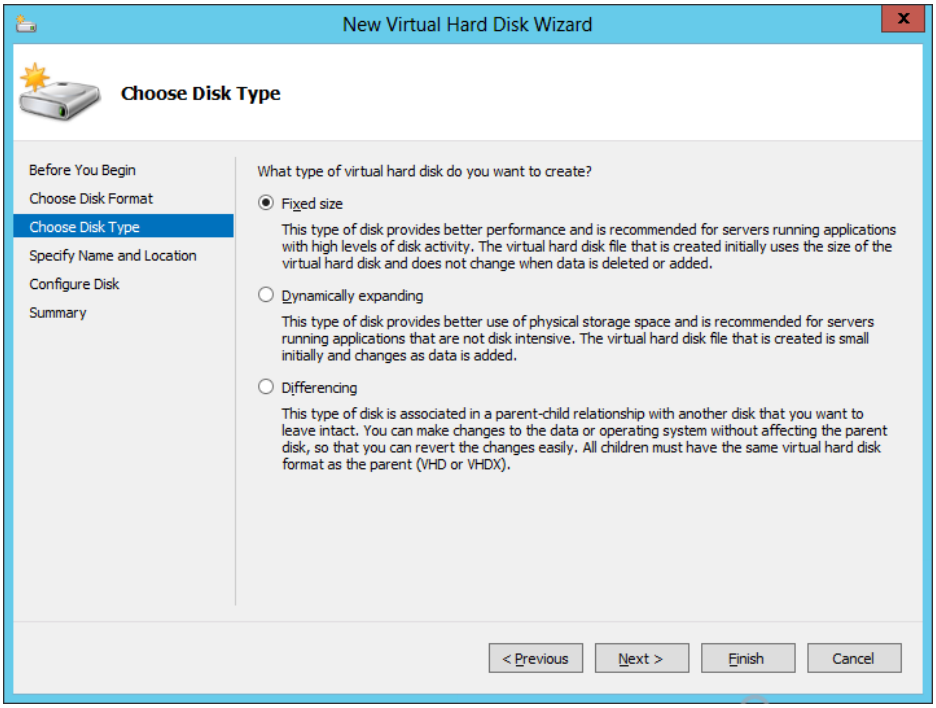


Figure 8-1
The Choose Disk Type page

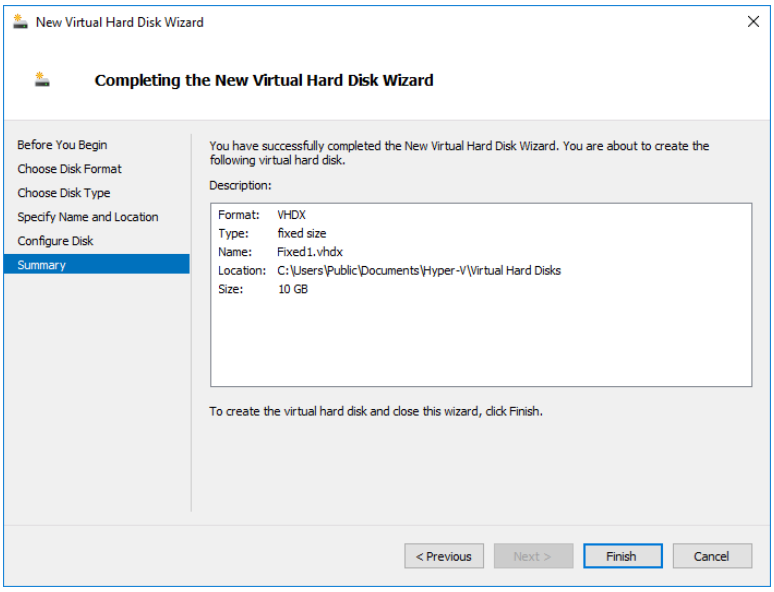
5. Select the **Fixed size** option and click Next. The *Specify Name and Location* page appears.

Question 2	*If you choose to create a differencing drive rather than a fixed size drive, you must specify a name for the new disk and also identify a parent disk. What happens to the parent disk as a result of creating the differencing disk?*

6. In the Name text box, type **Fixed1** and click Next. The *Configure Disk* page appears.

7. Leave the *Create a new blank virtual hard disk* option selected and, in the Size text box, type **10** and click Next. The *Completing the New Virtual Hard Disk Wizard* page appears.

8. **[SCREEN COPY 1]** Take a screen shot of the *Completing the New Virtual Hard Disk Wizard* page, similar to the following picture, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 8 worksheet file in the page provided by pressing Ctrl+V.



Question 3	*If you were to select the* Copy the contents of the specified physical disk *option and then select one of the listed physical disks, would you or would you not be creating a pass-through disk?*

8. Click **Finish**. The wizard creates the new virtual disk file.

End of exercise. You can leave the windows open for the next exercise.

Exercise 8.2	Editing a Virtual Hard Disk File
Overview	In this exercise, you open the virtual hard disk you created and modify it while it's offline.
Mindset	Under what conditions is it necessary to edit a VHD?
Completion time	10 minutes

1. On the SERVERB computer, in the Hyper-V Manager console, click **Edit Disk**. The Edit Virtual Hard Disk Wizard appears, displaying the *Before You Begin* page.

2. Click Next. The *Locate Virtual Hard Disk* page appears.

3. Click Browse. An Open combo box appears.

4. Select the **Fixed1.vhdx** virtual hard disk you created in Exercise 8.1 and click Open (see Figure 8-2).

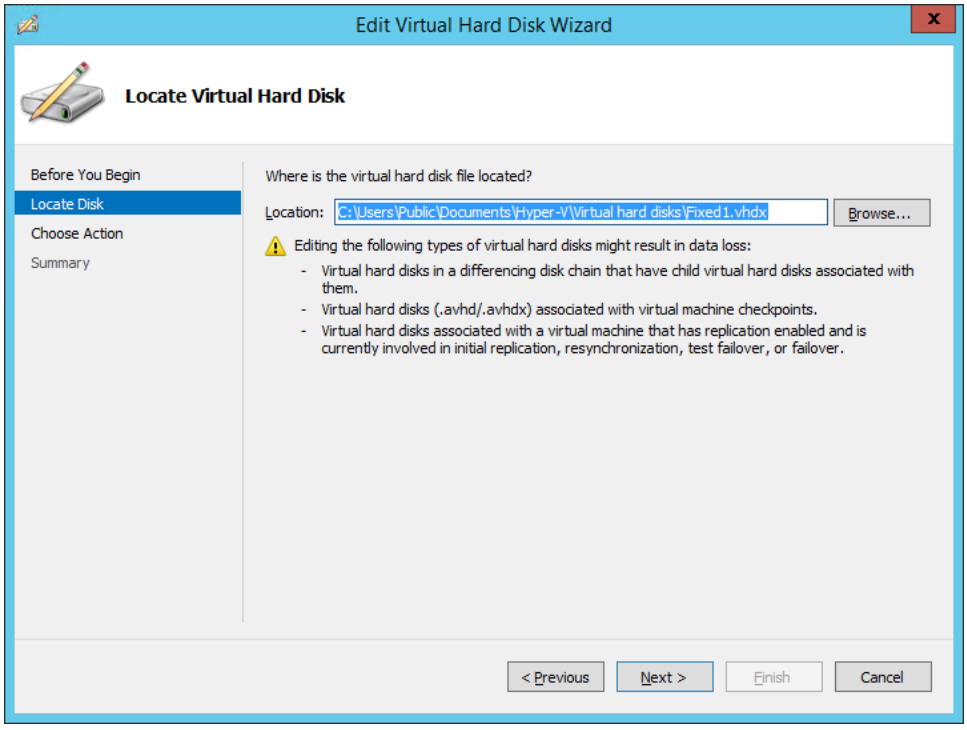


Figure 8-2

The Locate Virtual Hard Disk page

5. Click Next. The *Choose Action* page appears.

6. Select the **Expand** option and click Next. The *Expand Virtual Hard Disk* page appears.

7. In the New Size text box, type **12** and click Next. The *Completing the Edit Virtual Hard Disk Wizard* page appears.

Question 4	*What Windows PowerShell cmdlet can you use to expand a VHDX file while it is in its offline state?*

8. Click **Finish**. The wizard expands the file and closes it.

End of exercise. You can leave the windows open for the next exercise.

Exercise 8.3	Creating a VM with an Existing Virtual Hard Disk
Overview	In this exercise, you create a new virtual machine using an existing VHD.
Mindset	How do you mount an existing VHD into a new virtual machine?
Completion time	10 minutes

1. On the SERVERB computer, in the Hyper-V Manager console, click **New** > **Virtual Machine**. The New Virtual Machine Wizard appears, displaying the *Before You Begin* page.

2. Click Next. The *Specify Name and Location* page appears.

3. In the Name text box, type **Vmachine3** and click Next. The *Specify Generation* page appears.

4. Click Next. The *Assign Memory* page appears.

5. In the *Startup memory* text box, type **32** and click Next. The *Configure Networking* page appears.

6. Click Next. The *Connect Virtual Hard Disk* page appears.

7. Select the *Use an existing virtual hard disk* option, and then click **Browse**. An Open combo box appears.

8. Select the **Fixed1**.vhdx virtual hard disk you created in Exercise 8.1 and click **Open** (see Figure 8-3).

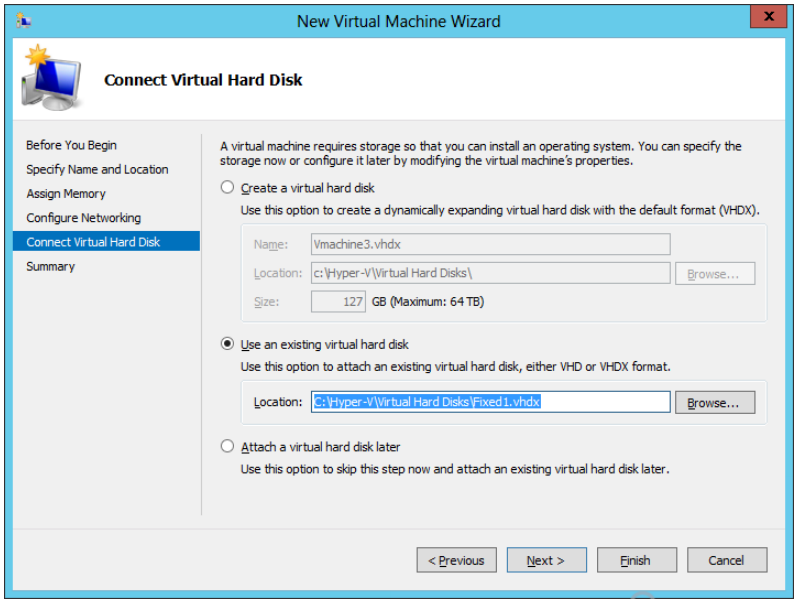


Figure 8-3
The Connect Virtual Hard Disk page

9. Click Next. The Completing the New Virtual Machine Wizard page appears.

Question 5	*Why doesn't the Installation Options page appear at this time, as it did when you ran the New Virtual Machine Wizard in Lab 7?*

10. Click **Finish**. The wizard creates the new virtual machine, and it appears in the Hyper-V Manager console.

11. **[SCREEN COPY 2]** Take a screen shot of the Hyper-V Manager console, showing Vmachine3 has been created, by pressing Alt+Prt Scr, and then paste

the resulting image into the Lab 8 worksheet file in the page provided by pressing Ctrl+V.

End of exercise. You can leave the windows open for the next exercise.

Exercise 8.4	Configuring QoS on a Virtual Hard Disk
Overview	In this exercise, you create a new virtual machine using an existing VHD.
Mindset	How do you mount an existing VHD into a new virtual machine?
Completion time	10 minutes

1. On the SERVERB computer, in the Hyper-V Manager console, right-click the **Vmachine3** VM you created in Exercise 8.3 and, from the context menu, select **Settings**. The Settings dialog box appears.

2. Click Hard Drive – Fixed1.vhdx and click Quality of Service. You need to click the + sign to expand the Hard Drive, then you can see the Quality of Service option.

3. Select the **Enabled Quality of Service management** check box to activate the Minimum and Maximum controls.

4. In the Minimum text box, type **50**. In the Maximum text box, type **400** and click OK. IOPS means input/output operations per second.

   End of exercise. You can leave the windows open for the next exercise.

Exercise 8.5	Creating a Pass-Through Disk
Overview	In this exercise, you configure a virtual machine to use a physical disk in the host computer, rather than a VHD.
Mindset	Under what conditions would you want to use a pass-through disk, rather than a virtual hard disk?
Completion time	15 minutes

1. On the **SERVERB** computer, unlock the screen, if needed, and then in Server Manager, click Tools > Hyper-V Manager. The Hyper-V Manager console appears.

2. In the right pane, click **New** > **Virtual Machine**. The New Virtual Machine Wizard appears, displaying the *Before You Begin* page.

3. Click Next. The *Specify Name and Location* page appears.

4. In the Name text box, type **Vmachine4** and click Next. The *Specify Generation* page appears.

5. Click Next. The *Assign Memory* page appears.

6. In the *Startup memory* text box, type **32** and click Next. The *Configure Networking* page appears.

7. Click Next. The *Connect Virtual Hard Disk* page appears.

8. Select the *Attach a virtual hard disk later* option and click Next. The *Installation Options* page appears.

9. Click Next. The *Completing the New Virtual Machine Wizard* page appears.

10. Click Finish. The wizard creates the new virtual machine, and it appears in the Hyper-V Manager console.

11. Select the **Vmachine4** virtual machine you just created and, in the right pane, click **Settings**. The *Settings for Vmachine4 on SERVERB* dialog box appears.

12. In the Hardware list, click the *IDE Controller 0* node. On the right side of the dialog box, select Hard Drive and click Add. The *Hard Drive* page appears.

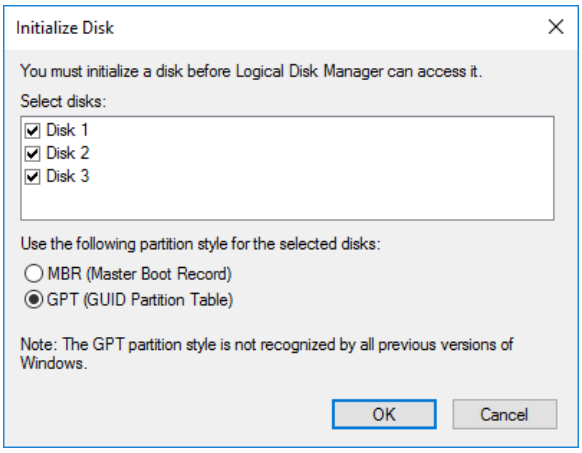
13. Notice that the *Physical hard disk* option is greyed out, so you cannot create a pass-through disk.

14. Click Cancel to close the Settings dialog box.

15. In Server Manager, click **Tools** > **Computer Management**. The Computer Management console appears.

16. In the left pane, select the **Disk Management** node. The Disk Management snap-in appears (see Figure 8-4).

    The Disk Management first asks you to initialize the three new added virtual disks.



Right click Disk 1 > New Simple Volume > Next > (default size) Next > (default drive letter E) Next > (default NTFS file system) Next > Finish.

Similarly, create simple volume on Disk 2 and Disk 3.

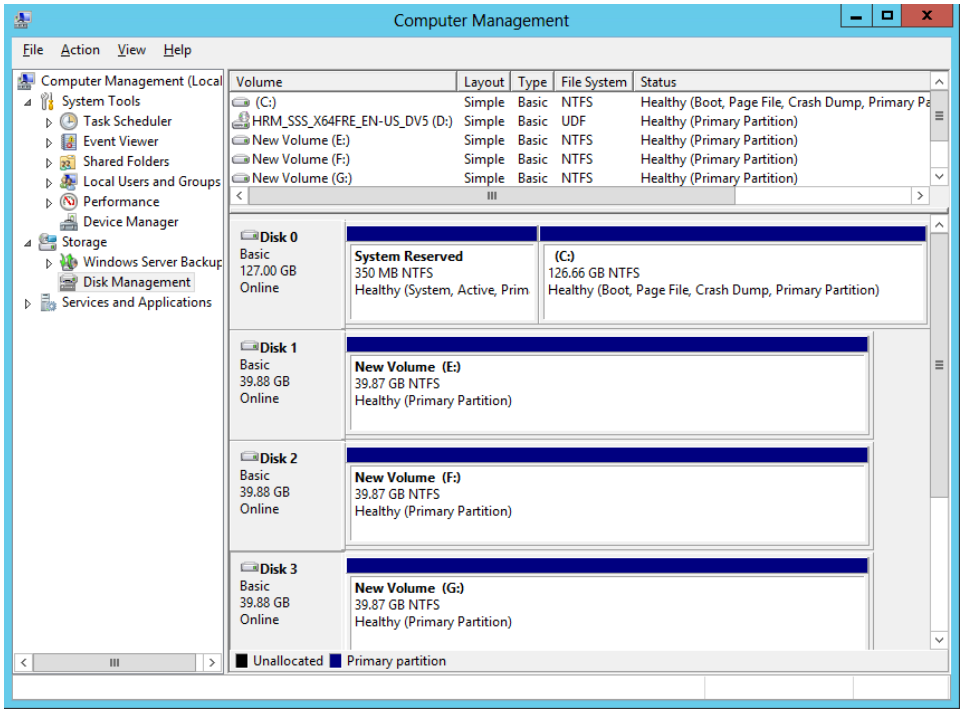


Figure 8-4
The Disk Management snap-in

Question 6	*Why don't any of the physical disks in the Disk Management snap-in appear in the Settings dialog box when you attempt to create a pass-through disk?*

17. In the Disk Management snap-in, right-click the **Disk 3** panel (gray area on left side, not blank white area on right) and, from the context menu, select **Offline**. The status of the disk changes to offline.

18. Close the Computer Management console.

19. Back in the Hyper-V Manager console, open the Settings dialog box for the **Vmachine4** VM once again.

20. In the Hardware list, click the *IDE Controller 0* node. On the right-side of the dialog box, select **Hard Drive** and click **Add**. The *Hard Drive* page appears.

21. Select the *Physical hard disk* option to create a pass-through disk. This time, the disk you took offline appears in the drop-down list.

22. Select Disk 3 in the drop-down list.

23. **[SCREEN COPY 3]** Take a screen shot of the Settings dialog box in the Hyper-V Manager console, showing the pass-through disk option, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 8 worksheet file in the page provided by pressing Ctrl+V.

24. Click OK to close the Settings dialog box.

End of exercise. You can leave the windows open for the next exercise

Lab Challenge	Creating a Checkpoint
Overview	To complete this challenge, you must create a checkpoint of a virtual machine, preserving its state at a particular date and time.
Completion time	10 minutes

To complete this challenge, create a checkpoint of Vmachine3 on SERVERB and take a screen shot of the Hyper-V Manager console, showing the checkpoint you created, by pressing Alt+Prt Scr, and then paste the resulting image into the Lab 8 worksheet file in the page provided by pressing Ctrl+V

End of lab. You can log off or start a different lab. If you want to restart this lab, you'll need to click the End Lab button in order for the lab to be reset.