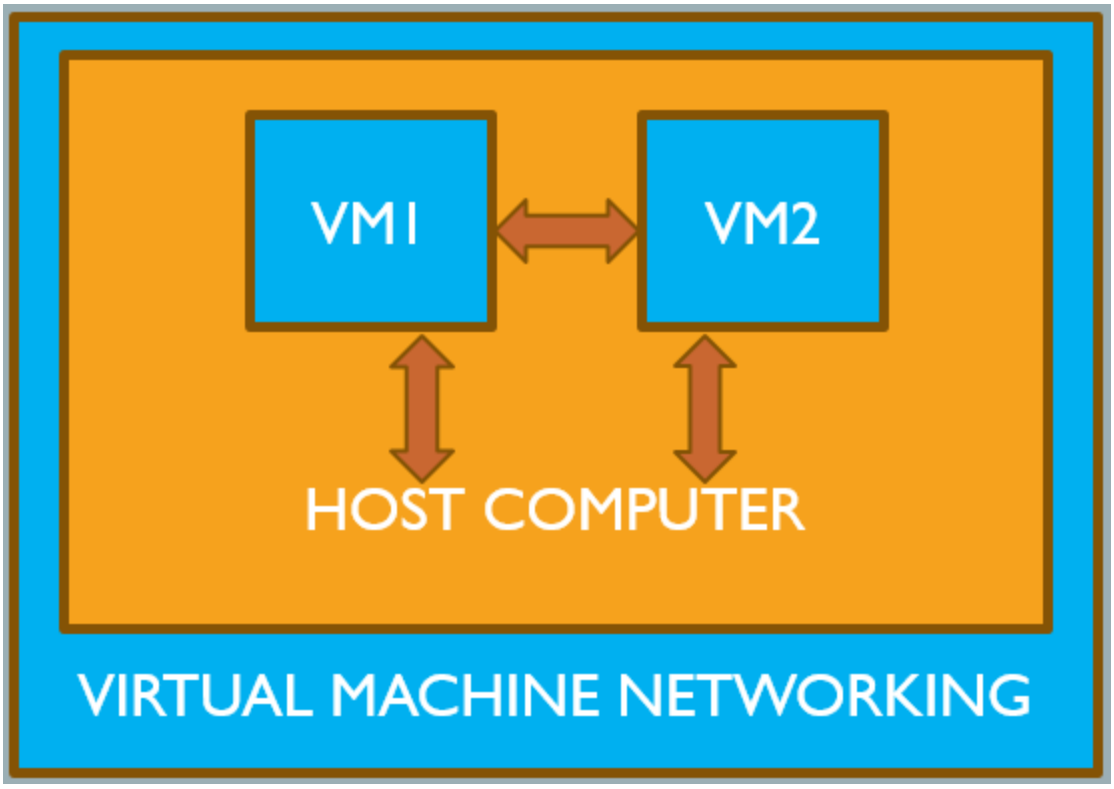
VIRTUAL NETWORK COMMUNICATION

STEP-BY-STEP USER GUIDE

JAY J. DAVE



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Section 0 - Doc-Control Information

Document Information

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Document Owner	Jay J. Dave
Title	Sr. Technical Writer & Training Developer

Introduction:

This document provides step-by-step guide on how to setup Virtual Machine (VM) on Host Computer and establish communication between them.

This documentation covers following topics:

1. Inside Host Computer, create a folder structure and copy two VM Folders
2. Create Shared Folder inside Host Computer and each of the Virtual Machines
3. Configure each of the Virtual Machine to communicate with one another as well as the Host Computer
4. Manually assign IP Addresses to each of the Virtual Machine
5. Issue IP Config and Ping commands to verify the IP Information and Communication
6. Few Troubleshooting Tips to solve some common configuration errors

Reference Documents

DOC #	DOCUMENT DESCRIPTION

Revision History

REV #	DATE	HISTORY DETAIL
A	06/01/2018	Initial Release

Section 1 - Basic Host Computer Setup

NOTE: Refer to Figure 1-1 and Figure 1-2 and Figure 1-3

1.1 Host Computer Setup:

1.1.1 In C:\ Drive, create a folder and name it as xHOST Share Folder.

1.1.2 In newly created folder, create or add any Word or Text document.

1.1.3 In newly created folder, add two VMware Virtual Machine folders. Name these folders as follows:

- Name one VMware virtual machine folder to VM1
- Name other VMware virtual machine folder to VM2

Figure 1-1 C:\ Drive xHOST Folder Content

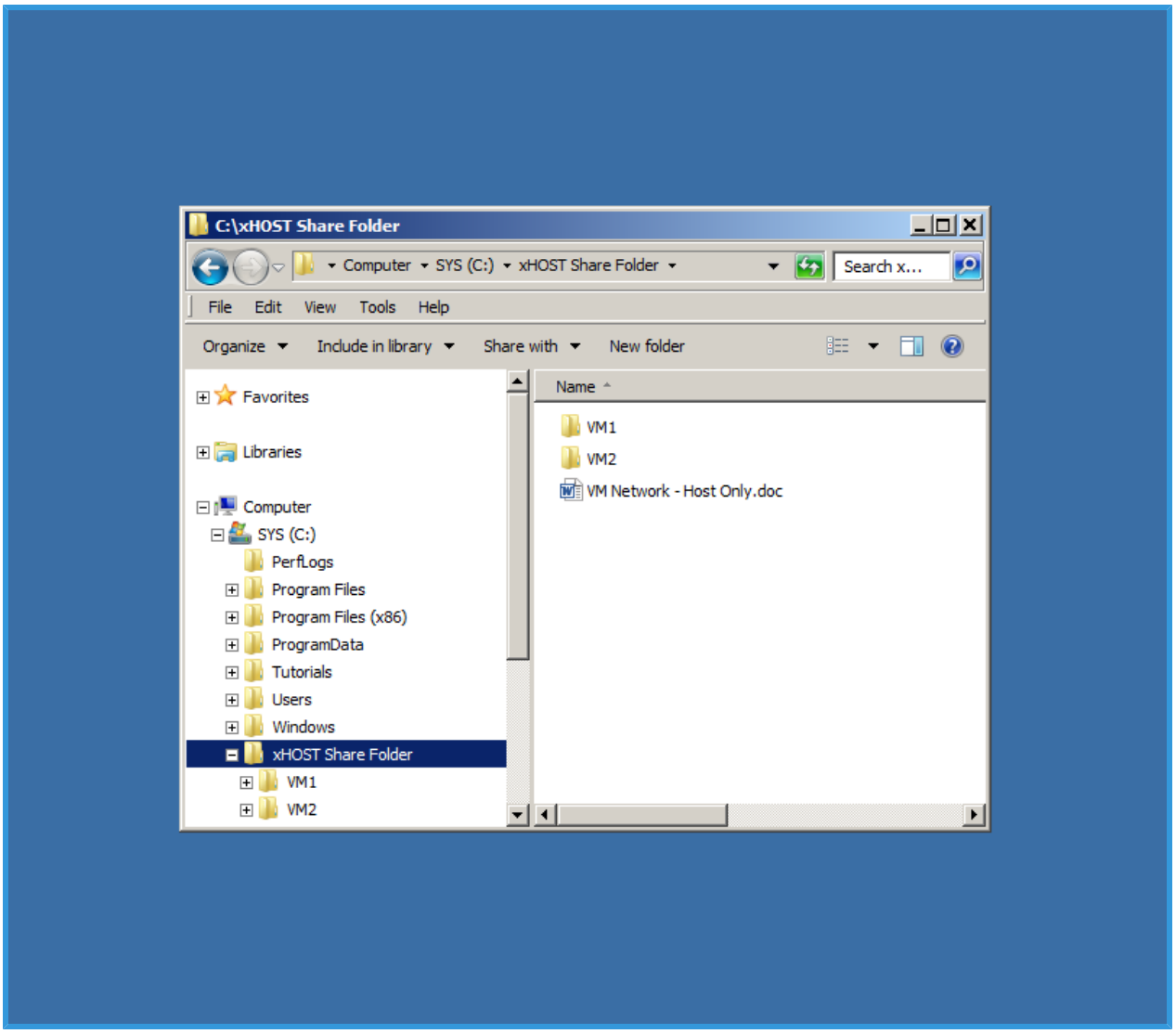


Figure 1-2 VM1 Folder Content

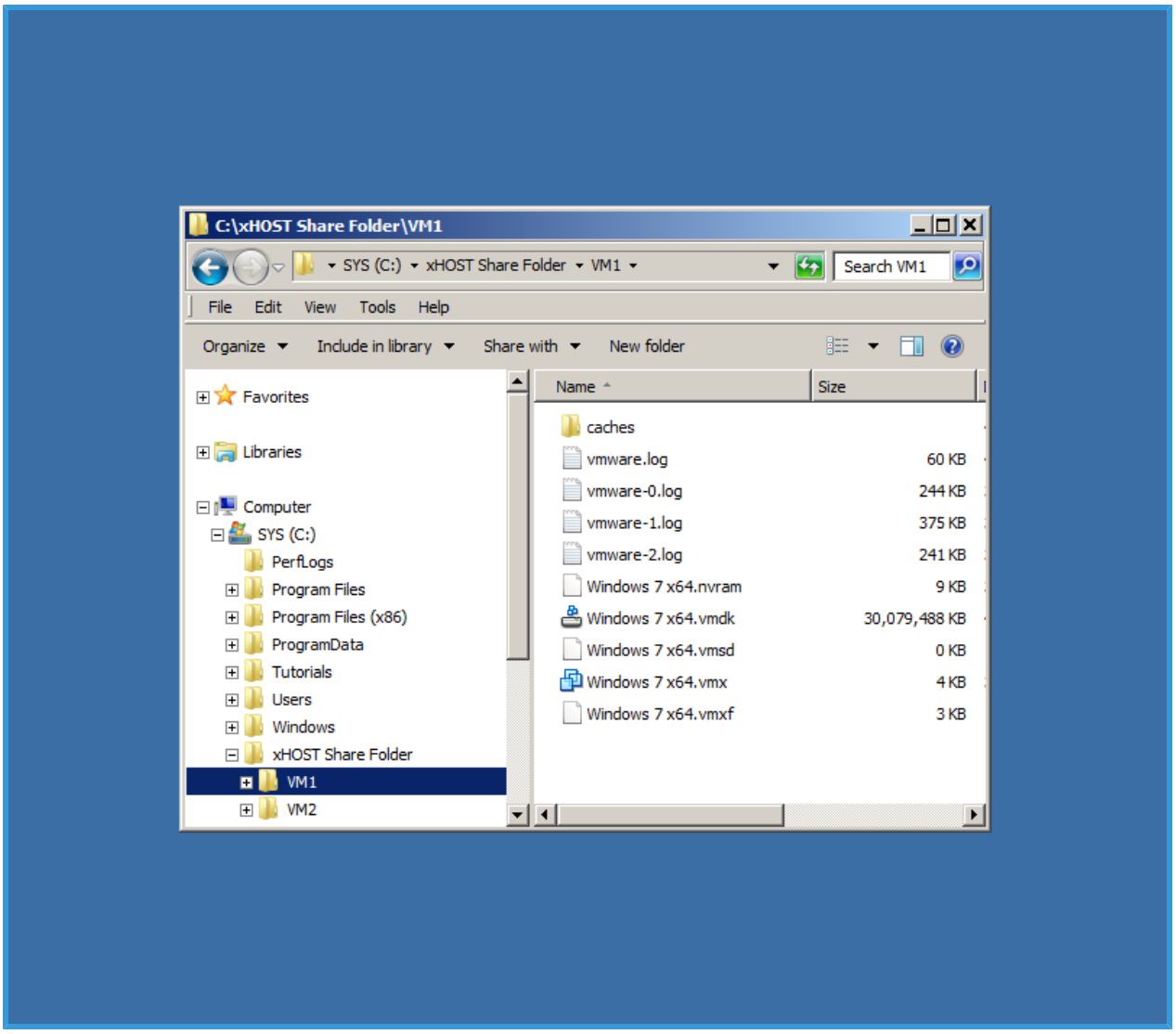
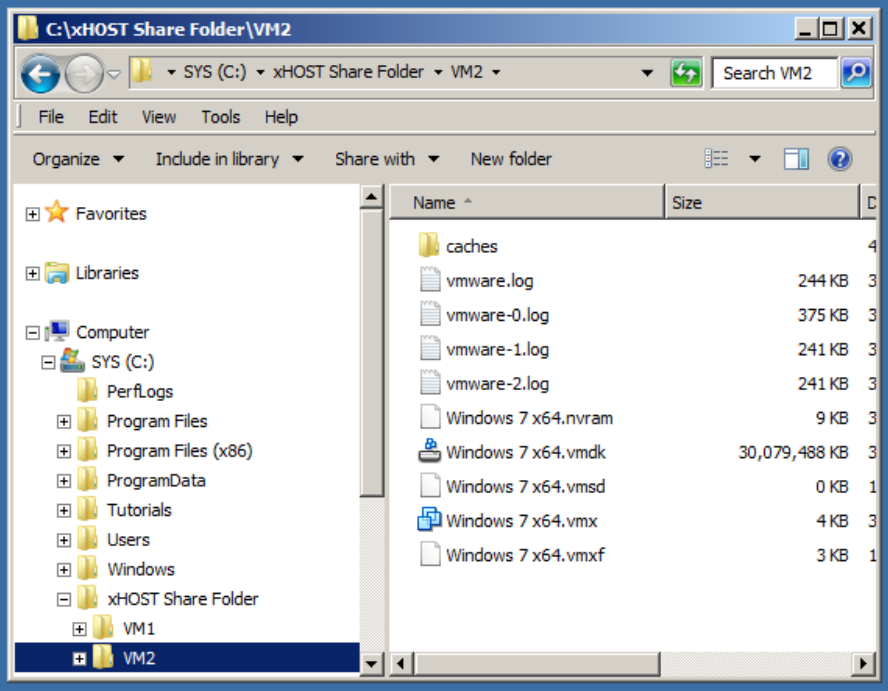


Figure 1-3 VM2 Folder Content



NOTE: Refer to Figure 1-4 and Figure 1-5 and Figure 1-6 .

1.2 Add VM1 to VMware Player:

1.2.1 Double click on VMware icon to open VMware Player application.

1.2.2 In VMware Player Application window, select Open a Virtual Machine link.

1.2.3 Navigate to the C:\xHOST Share Folder\VM1 folder and double click on file name which has extension .vmx (Windows 7x64.vmx) to open VM1.

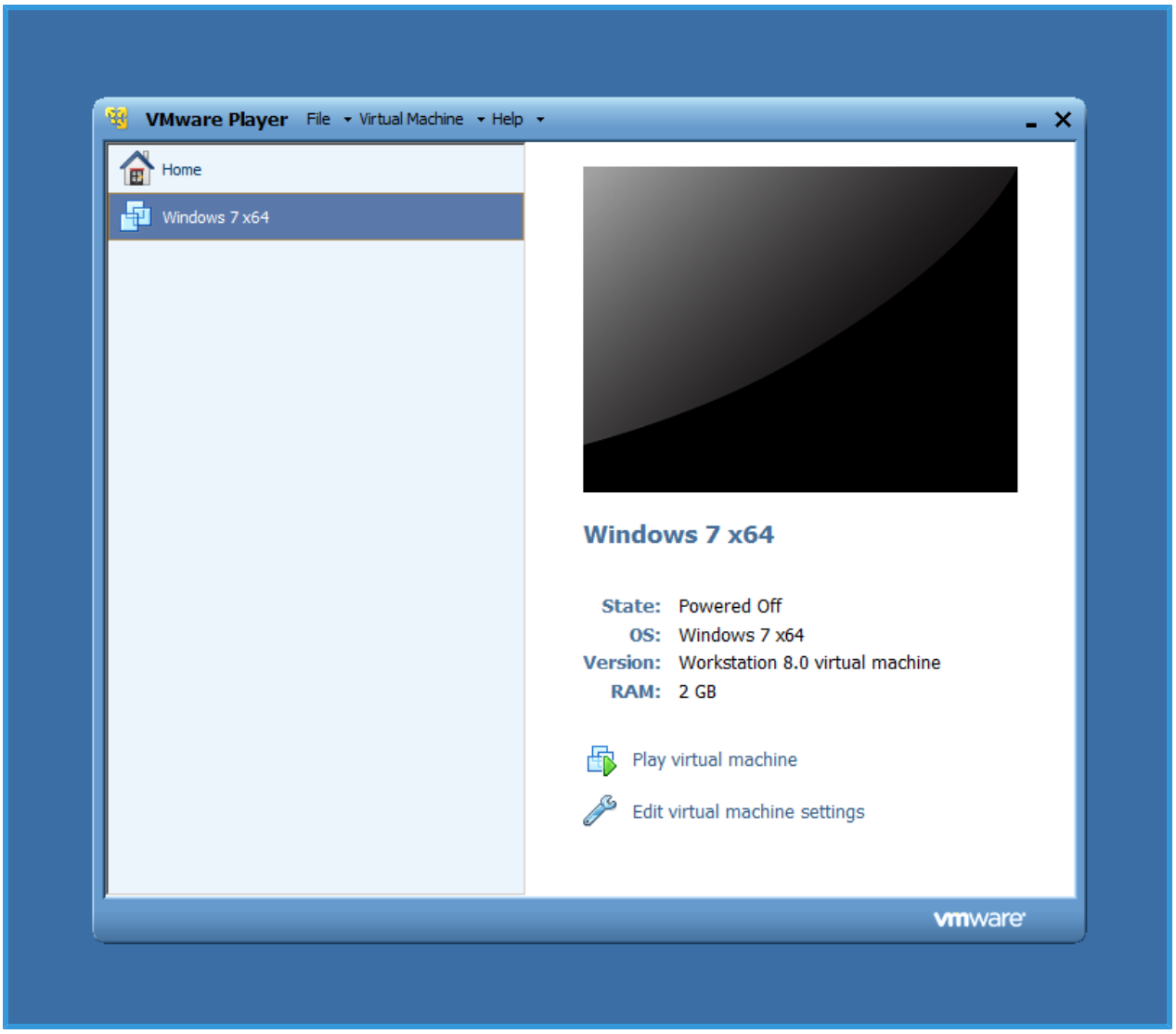
1.2.4 VM1 will be added to the VMware Player.

- At the moment name of VM1 is set to default file name (Windows 7 x64), which will change in next few steps

Figure 1-4 VMware Player - Home Screen

Figure 1-5 Navigate to .vmx File

Figure 1-6 VMware Player - VM1 Added



1.3 Repeat the above Step 1.2 and add VM2 to VMware Player (from C:\xHOST Share Folder\VM2 folder).

Section 2 - Configure VM Hardware

NOTE: Refer to Figure 2-1 .

2.1 Follow these steps to Configuration VM Settings:

2.1.1 In VMware Player window, click on default VM (Windows 7 x64) for VM1.

2.1.2 From the right-side of the window, click on Edit virtual machine settings.

2.1.3 Virtual Machine Settings dialog box will display.

- Same dialog box can also be accessed through the top menu bar Virtual Machine > Virtual Machine Settings (or shortcut key Ctrl + D)

2.1.4 In the Virtual Machine Settings dialog box, by default Hardware tab is selected.
Left-side displays list of devices and right-side displays the settings for any selected device.

- It is possible that your device list may differ from the one that is shown in Figure 2-1 ; however, the process is still the same
- From the Device list, devices can be added or removed (except Memory, Processors, Hard Disk and Display)
- To remove any device, select a device and click Remove button at the bottom of the section
- To add a device, click the Add button; then in Add Hardware Wizard, follow the step-by-step process to install a device

Figure 2-1 VM Player - Home Screen

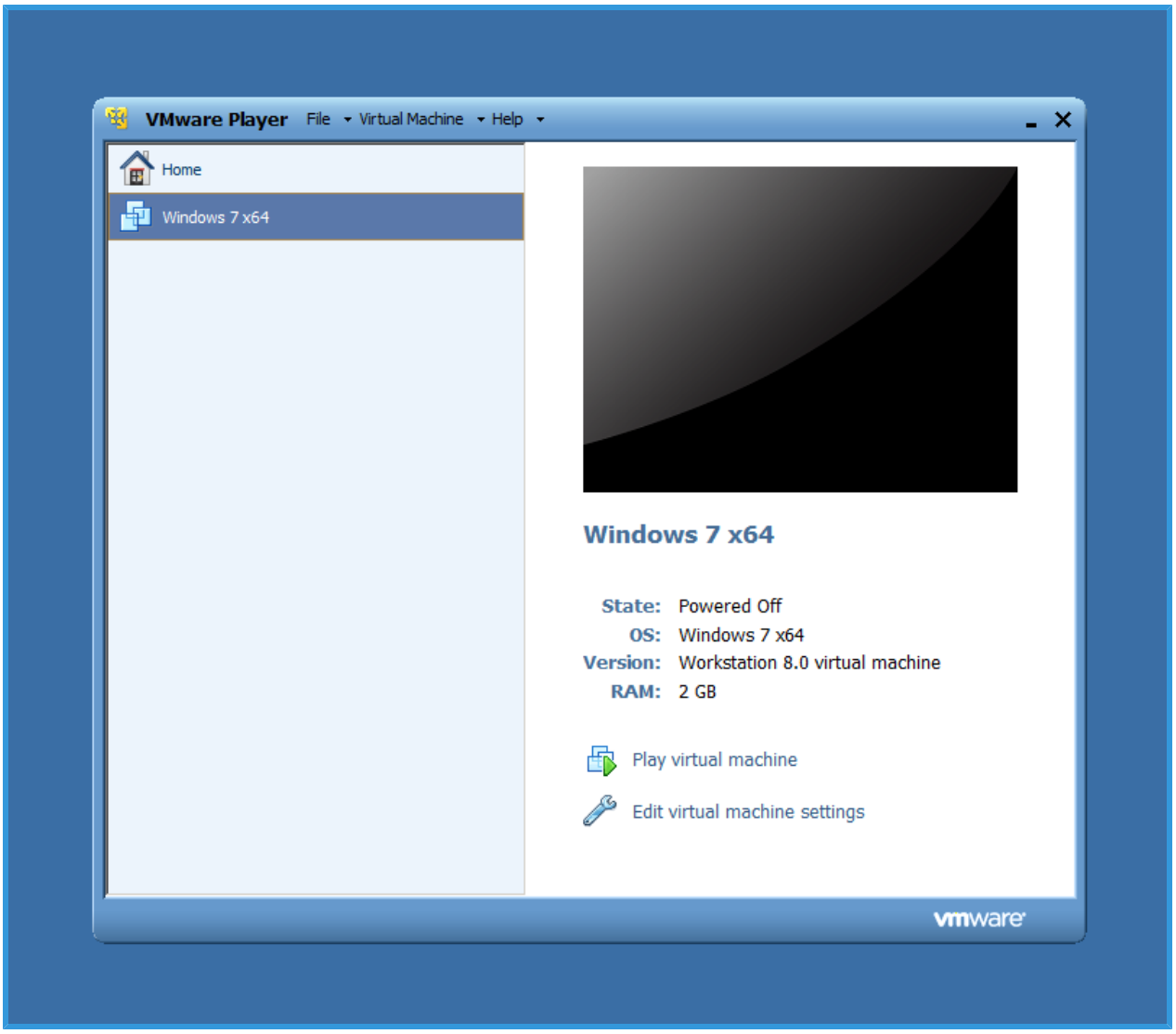
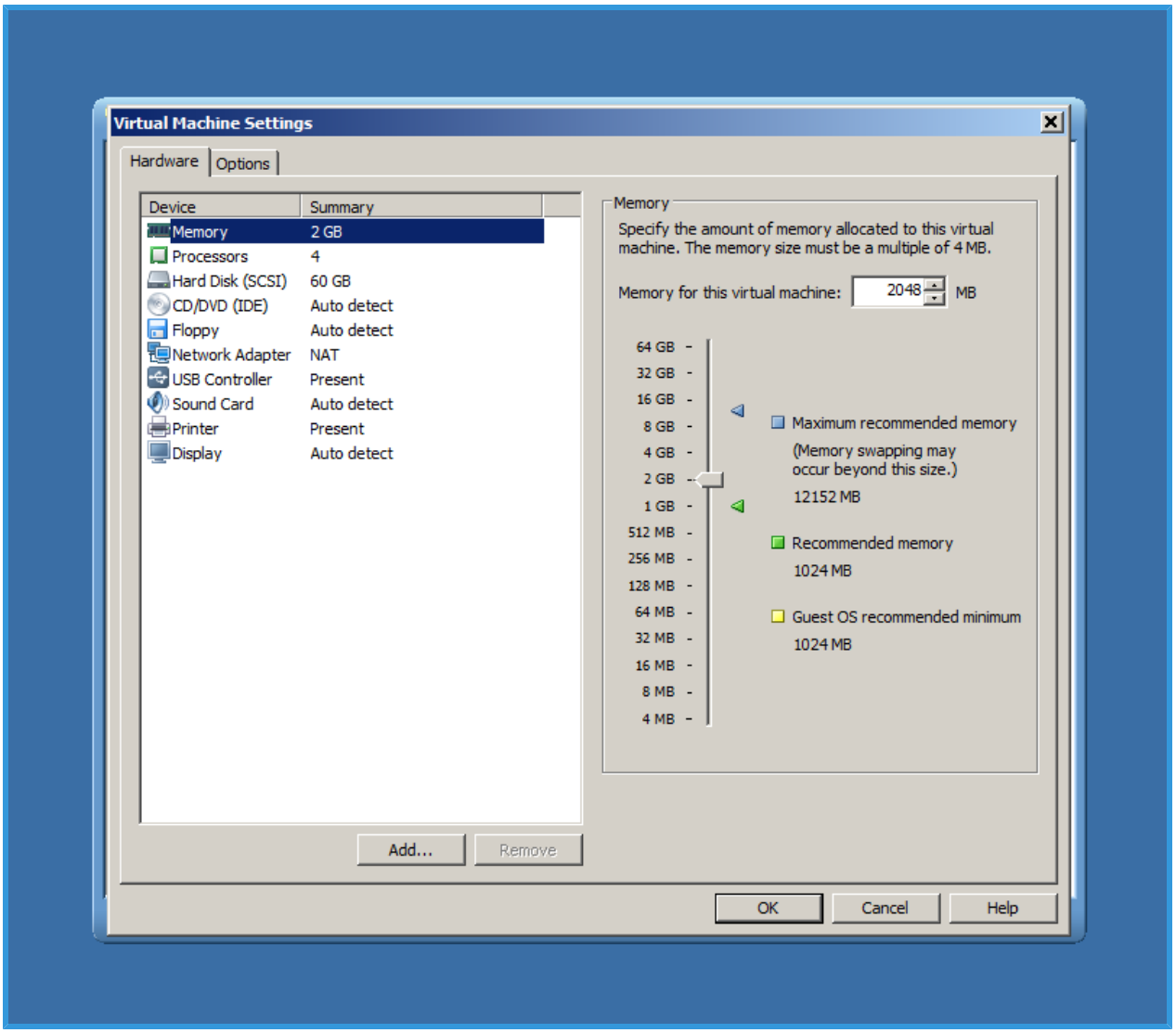


Figure 2-2 VM Settings - Hardware 1



NOTE: Refer to Figure 2-3 .

2.2 Configure Networks Adapter settings for VM1.

2.2.1 From the left-side, select Network Adapter device.

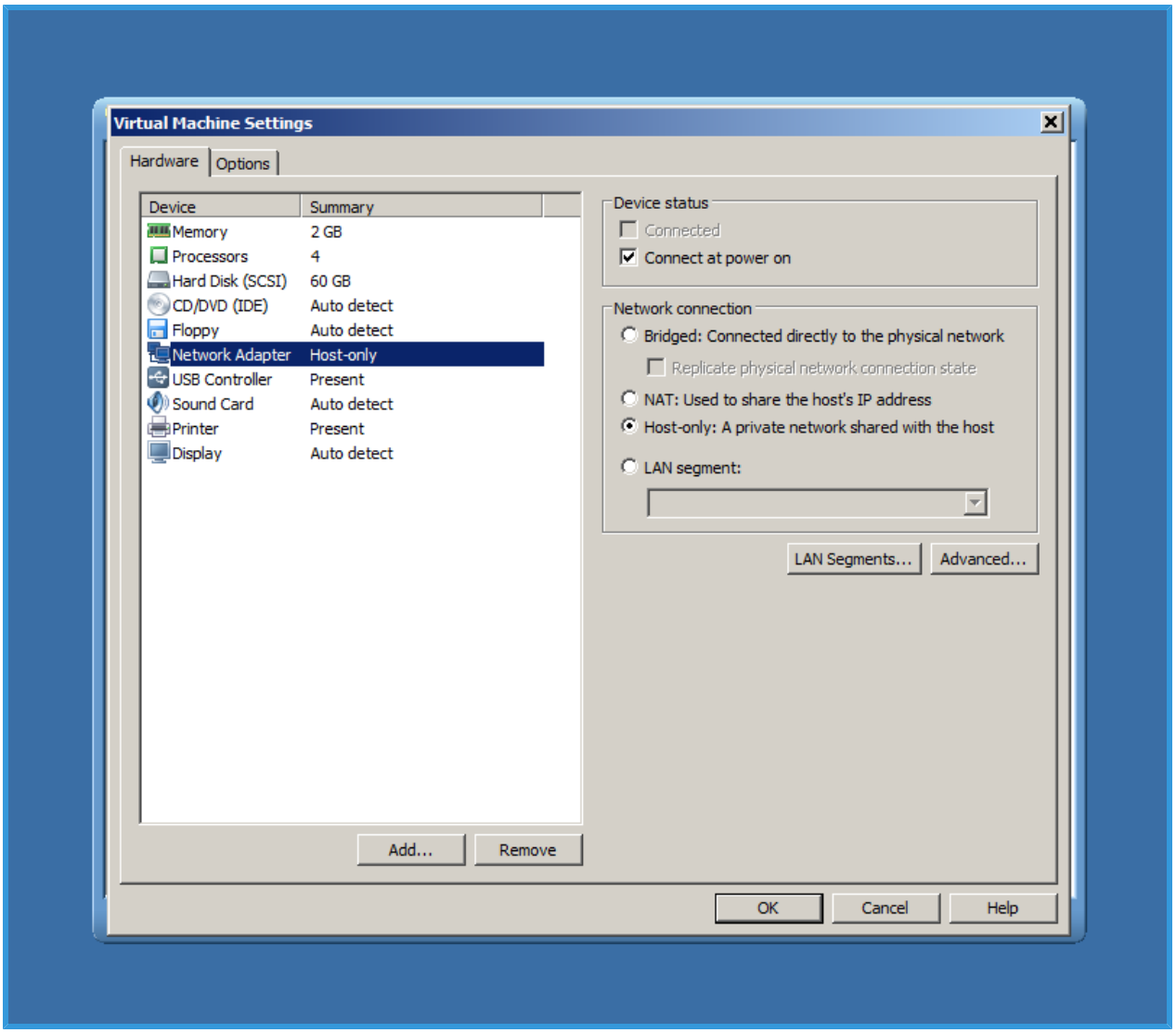
2.2.2 On the right-side verify the following settings are checked.

- For Device Status, make sure Connect at power on is checked
- For Network Connection, make sure Host-only: A private network shared with the host is selected

Brief explanation about each of the available networks option:

- Bridge: Allows VM to communicate with other Computers or VMs that are outside of Host Computer, but are on the same network
- NAT: NAToption is similar to the Bridge option
- Host-only: This VM can only communicate with Host Computer and other VM which are inside the Host Computer
- LAN segment: LAN options is similar to Host-only option

Figure 2-3 VM Settings - Hardware 2



2.3 Repeat the above process to configure hardware for VM2.

Section 3 - Configure VM Options

NOTE: Refer to Figure 3-1 .

3.1 Follow these steps to Configuration VM Settings:

3.1.1 In VMware Player window, click on default VM (Windows 7 x64) for VM1.

3.1.2 From the right-side of the window, click on Edit virtual machine settings.

3.1.3 Virtual Machine Settings dialog box will display.

- Same dialog box can also be accessed through the top menu bar Virtual Machine > Virtual Machine Settings (or shortcut key Ctrl + D)
- In the Virtual Machine Settings dialog box, select the Options tab. Left-side displays list of options and right-side displays the settings for any selected option.
- It is possible that your option list may differ from the one that is shown in Figure 3-2 ; however, the process is still the same

Figure 3-1 VM Player - Home Screen

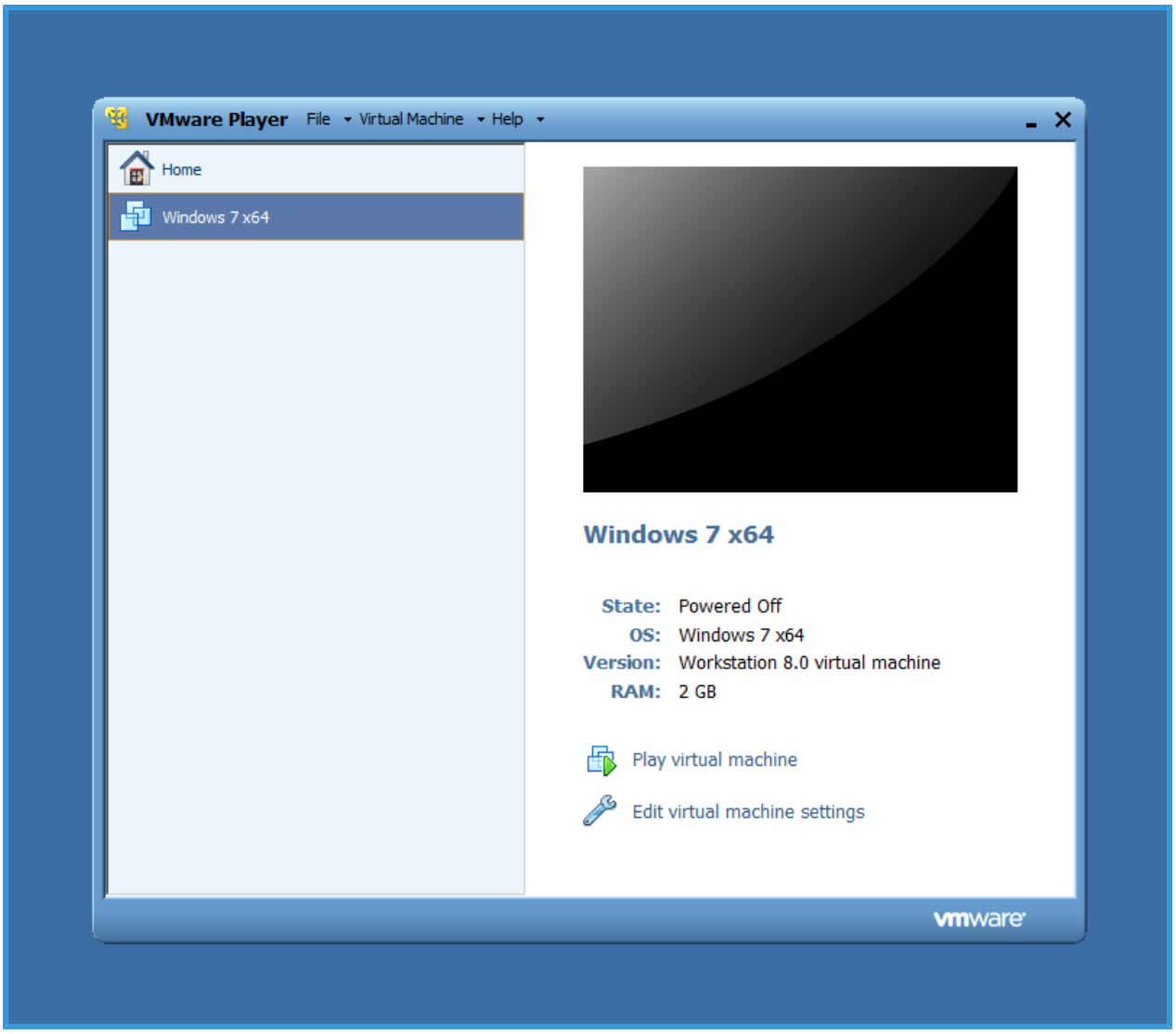
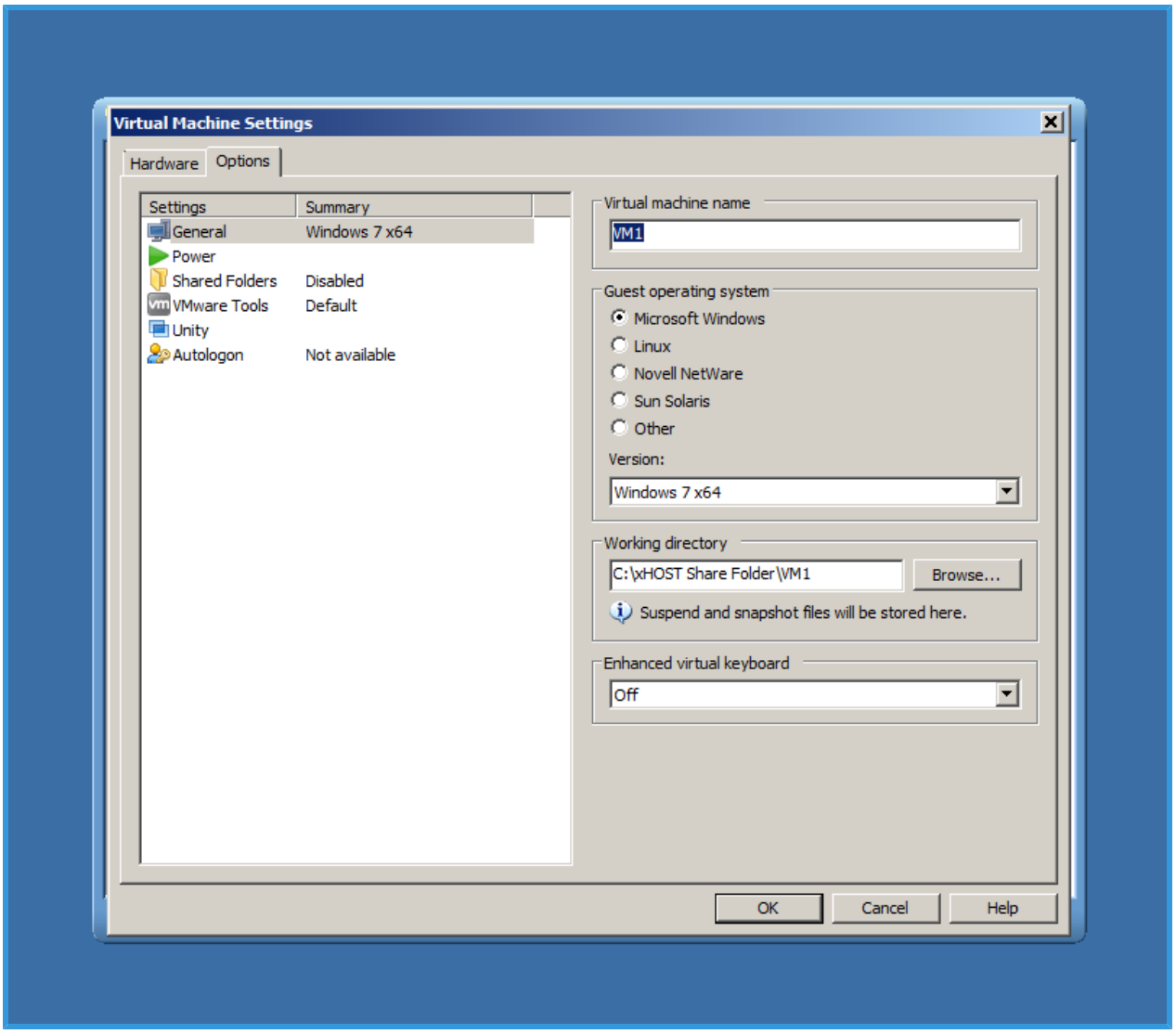


Figure 3-2 VM Settings - Options



3.2 Configure General settings for VM1 (see Figure 3-2).

3.2.1 From the left-side, select General.

3.2.2 On the right-side, change the Virtual Machine Name to VM1.

3.2.3 Verify that Working Directory is set to C:xHOST Share Folder\VM1

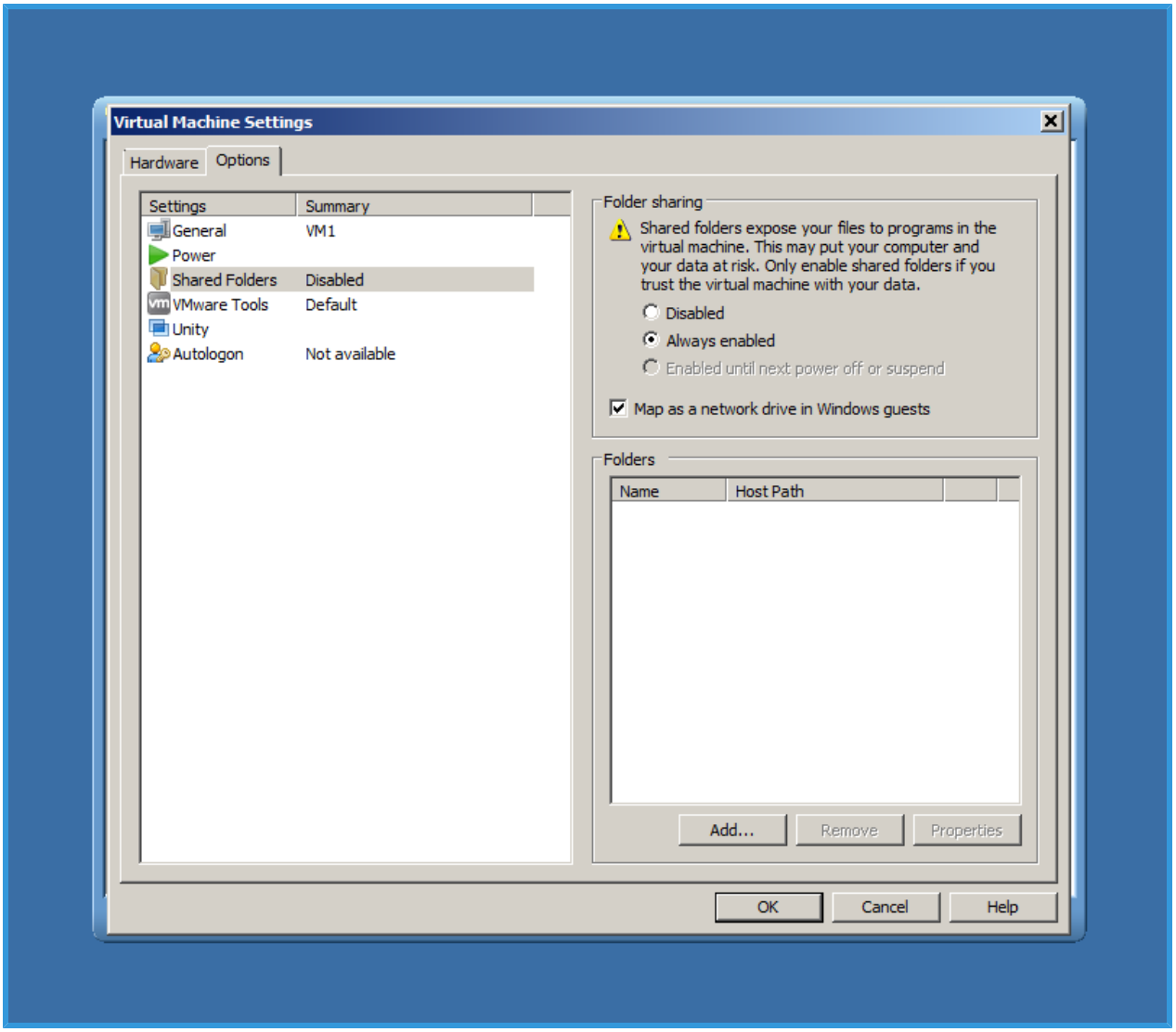
3.3 Configure Shared Folder settings for VM1, (see Figure 3-3).

3.3.1 From the left-side, select Shared Folders.

3.3.1.1 On the right-side (top-half), in the Folder Sharing section, select the Always enabled.

3.3.1.2 On the right-side (top-half), in the Folder Sharing section, check the Map as a network drive in Windows guests.

Figure 3-3 VM Settings - Folder Sharing



NOTE: Now assign a shared folder, this folder will be a common folder (for easy access to transfer files) between Host Computer and VM1. Additional folders can be added as necessary.

3.3.2 Assign Shared Folder (see Figure 3-4).

3.3.2.1 In the right-side (bottom-half), click on the Add button.

3.3.2.2 In the Add Shared Folder Wizard will display, click Next.

3.3.2.3 In next screen, for the Host Path, click on the Browse button.

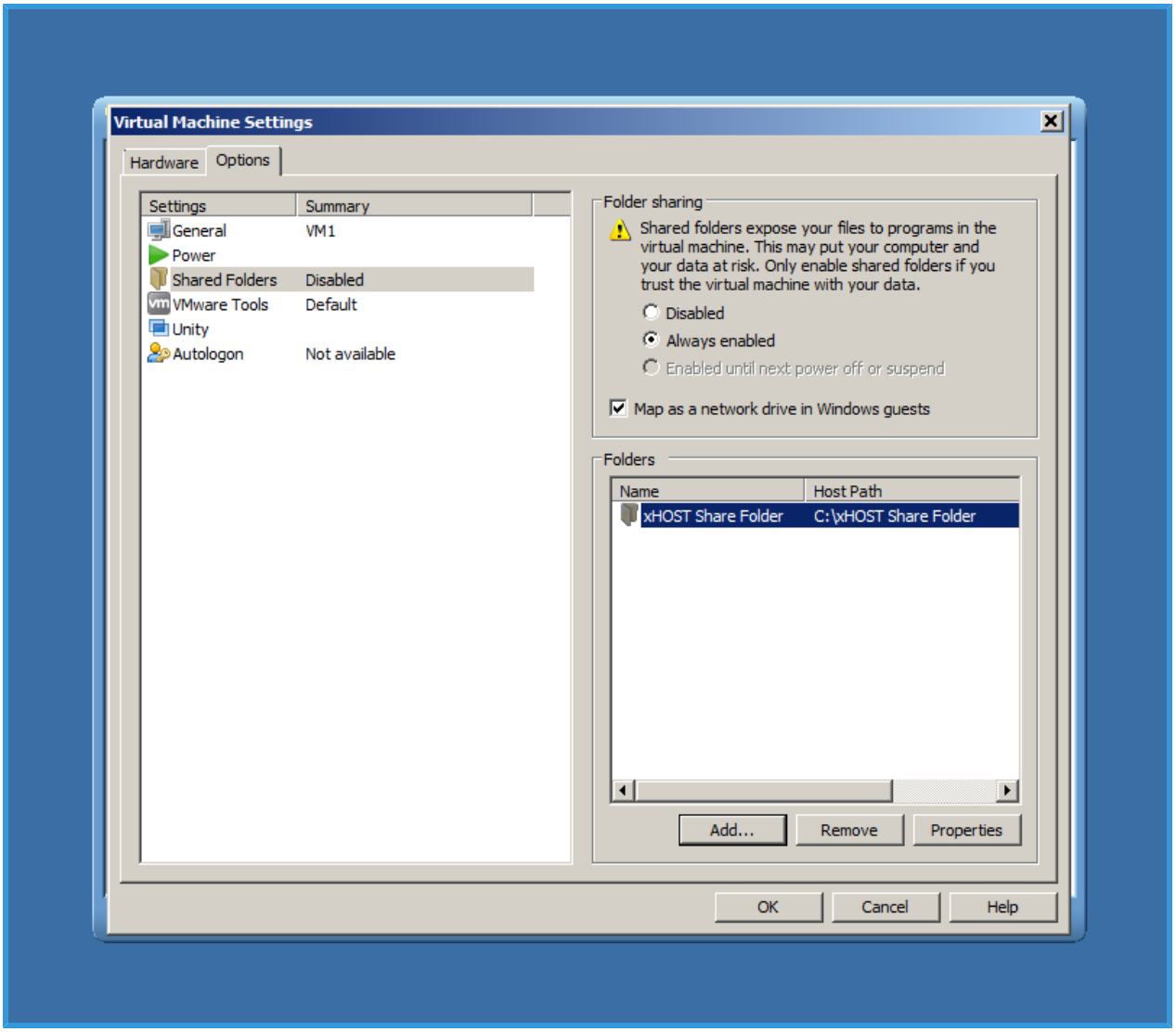
3.3.2.4 In the Browse For Folder dialog box, navigate to C:\ Drive and select the xHOST Share Folder. Then click OK.

3.3.2.5 Host Path is set and default Name is also set (same as Host Path). Click Next.

3.3.2.6 In the next screen, check the box next to the Enable This Share and then click Finish.

3.3.2.7 Shared Folder will be added to the Folders list.

Figure 3-4 VM Settings - Add Folder



3.4 Repeat the above process to configure options for VM2.

Section 4 - Basic VM Setup

NOTE: Refer to Figure 4-1 .

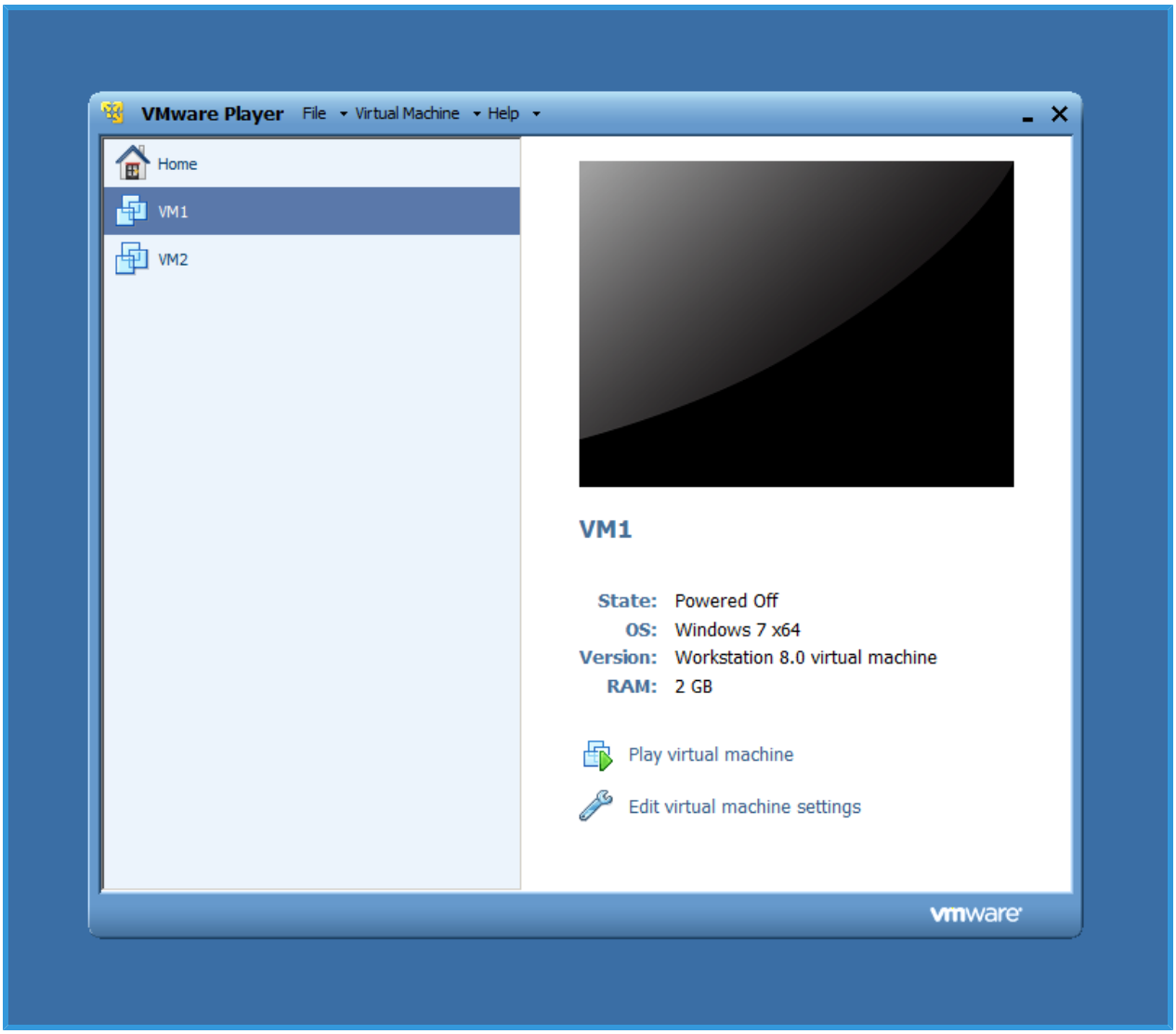
4.1 Open Virtual Machine VM1:

4.1.1 In VMware Player window, select on VM1 and then click on Play Virtual Machine link.

- If message displays "Virtual Machine might have been moved or copied", click I Copied It button
- If message displays "Can not connect the Virtual Device", click Yes button
- If Software Update dialog box displays, click Remind Me Later button
- If Removable Devices dialog box displays, click OK

4.1.2 Virtual machine will start the Windows Operating System.

Figure 4-1 Open Virtual Machine



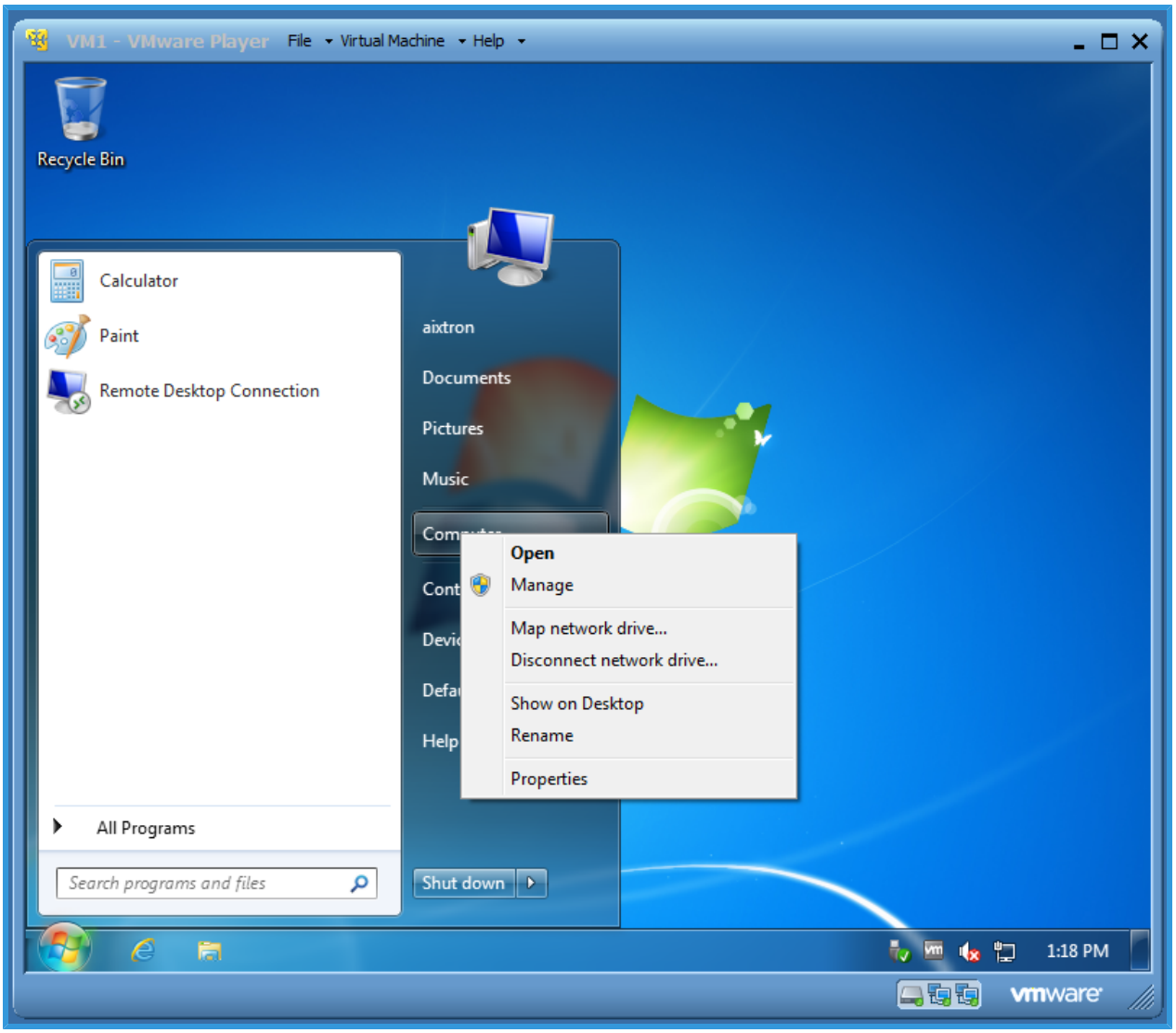
NOTE: Refer to Figure 4-2 and Figure 4-3 .

4.2 Change VM1 Computer Name.

4.2.1 When Windows Operating System has started, click on the Start button.

4.2.2 Then from the pop-up menu, right click on Computer, then from the context menu, click on Properties.

Figure 4-2 PC Name Change - 1



4.2.3 This will open Systems Window.
System window displays computer system related information including Computer Name.

4.2.4 To change Computer Name, follow these steps:

4.2.4.1 Click Change Settings link, located in section Computer name, domain, and workgroup settings.

4.2.4.2 System properties dialog box displays and Computer Name tab is selected.
Full computer name and workgroup information are displayed.

4.2.4.3 Click on the Change button to rename this computer.

4.2.4.4 In Computer Name/Domain Changes dialog box, type in the Admin-VM1 as new computer name and then click OK.

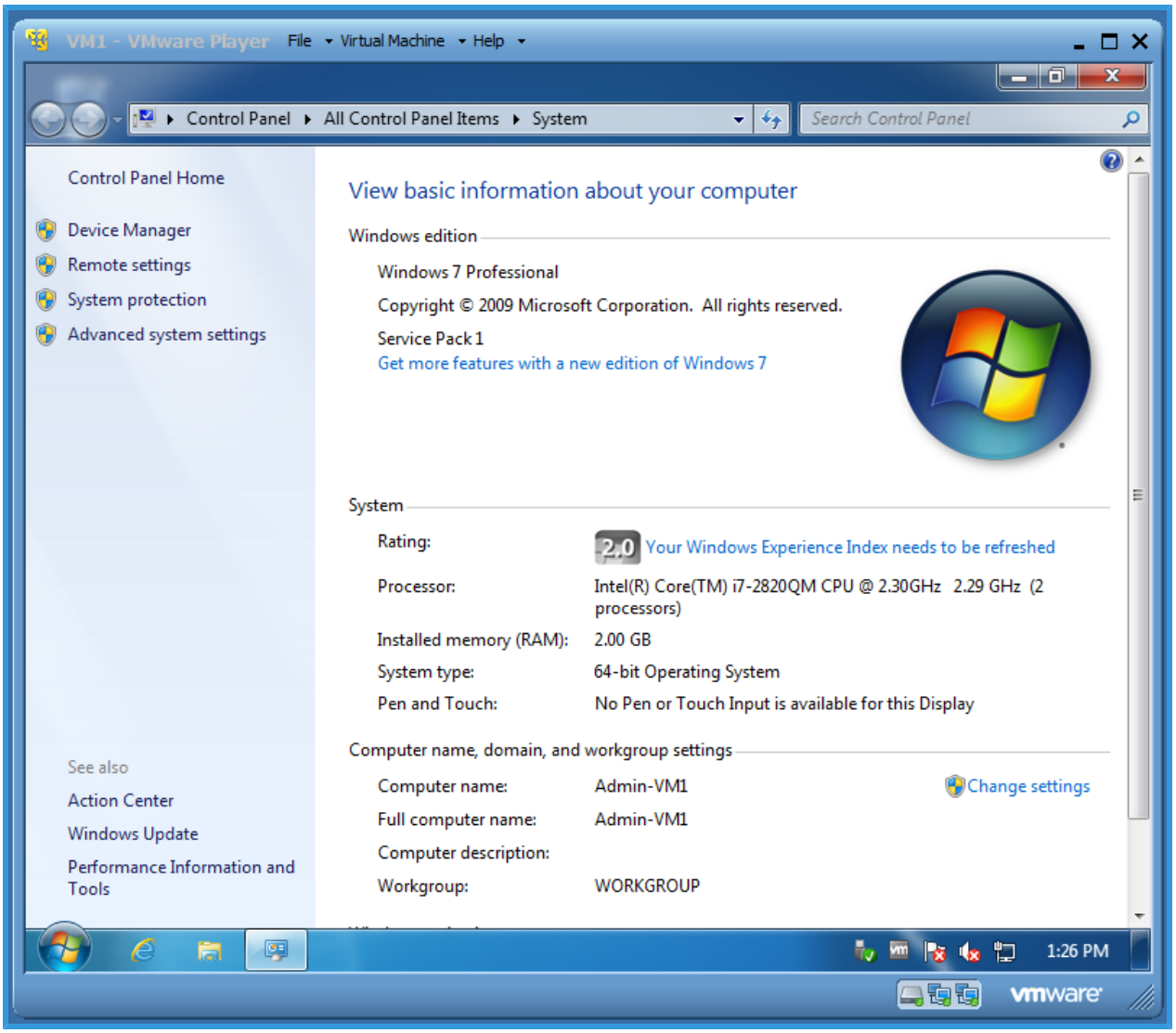
4.2.4.5 Message will pop-up saying, "You must restart the computer to apply the changes". To close pop-up, click OK.

4.2.4.6 Close System Properties dialog box by clicking Close button.

4.2.4.7 When message pops-up again to restart the system, click on Restart Now.

4.2.4.8 When Windows Operating System has started, re-check the Computer Name.
Computer name should be changed to VM1

Figure 4-3 PC Name Change - 2



4.2.5 Repeat this section for VM2, and change the Computer Name to Admin-VM2.

4.3 Check the Host Shared Folder:

4.3.1 Open Virtual Machine VM1

4.3.2 When Windows Operating System has started, click on the Windows Explorer button to open file manager.

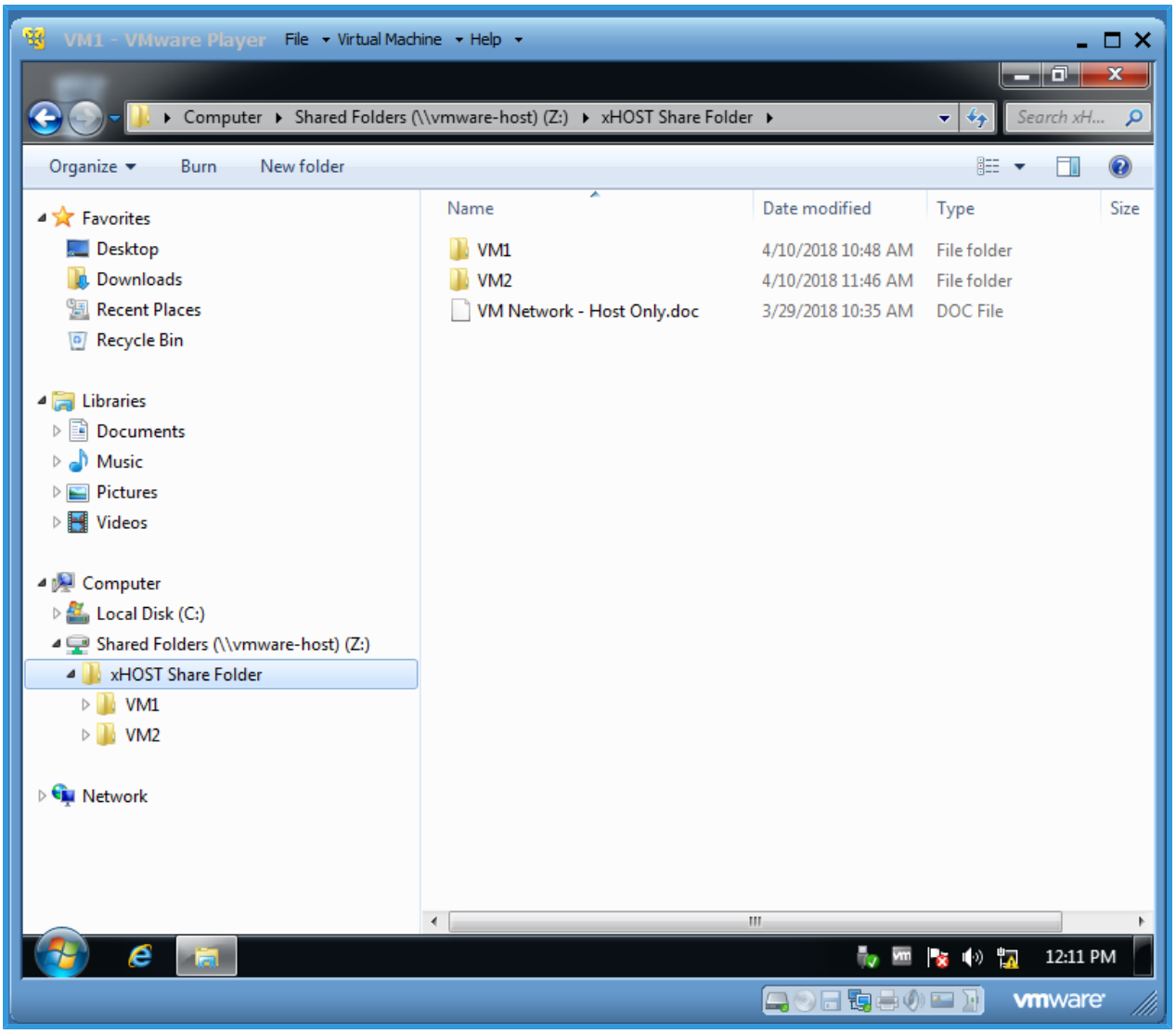
4.3.3 In the folder tree (on the left-side) under computer section, along with the C:\ drive, there should be an additional Shared Folders drive.

NOTE: Shared Folders drive is mapped as a Z: drive (\\vmware-host).

4.3.4 Expand the Shared Folders drive and xHOST Shared Folder will be displayed. This folder was setup earlier during the Section 3 - .

- This folder is located on the Host Computer and now available to share files between Host Computer and Virtual Machine
- Select the xHOST Share Folder and content of the folders will be visible on the right-side of the screen as shown in Figure 4-4

Figure 4-4 xHost Shared Folder



4.3.5 Repeat this section for VM2, and check the Host Shared Folder.

Section 5 - Setup VM Shared Folders

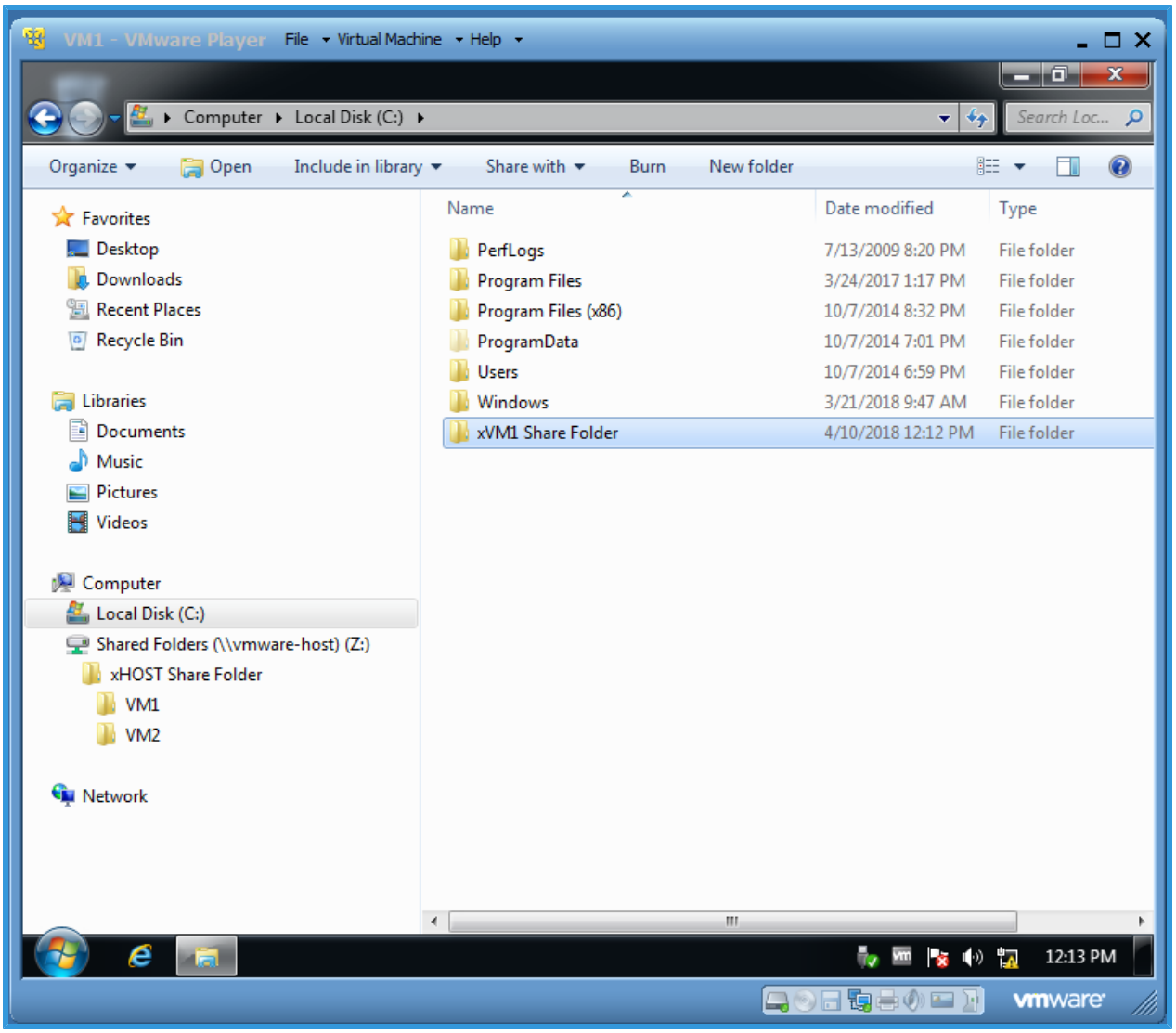
5.1 Create VM Shared Folder for VM1:

5.1.1 Click on the Windows Explorer button to open file manager.

5.1.2 From the left-side under Computer section, select C:\ drive.

5.1.3 On the right-side, create a new folder and name it as xVM1 Share Folder (see Figure 5-1).

Figure 5-1 VM Shared Folder



NOTE: Refer to Figure 5-2 .

5.2 Configure VM Shared Folder:

5.2.1 Click on the Windows Explorer button to open file manager.

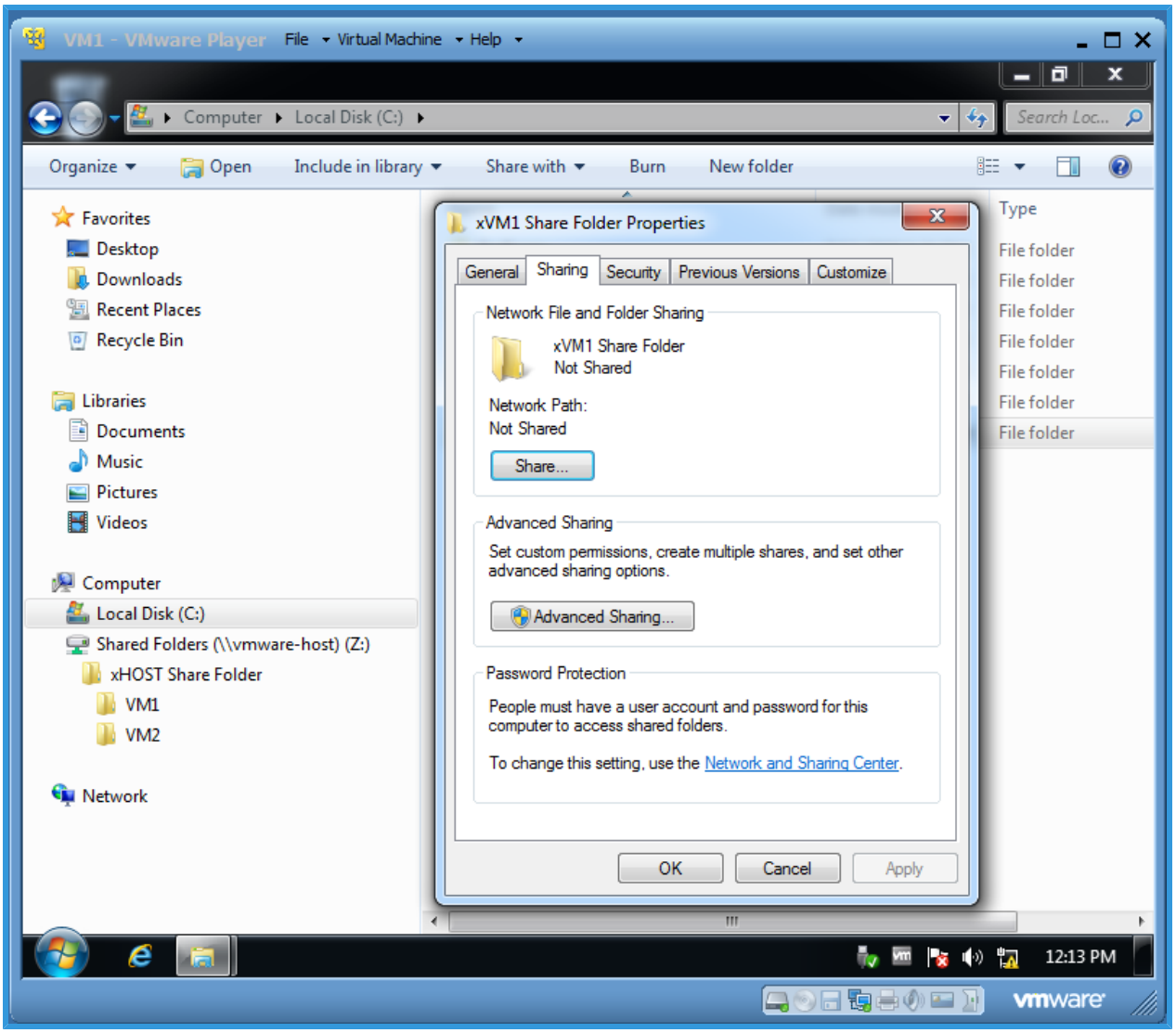
5.2.2 From the left-side under Computer section, select C:\ drive.

5.2.3 On the right-side, right-click on xVM1 Share Folder and then select Properties from the context menu.

5.2.4 Properties dialog box displays for xVM1 Share Folder.

5.2.5 Click on the Sharing tab.
Note that in Network File & Folder Sharing section, Network Path is set to Not Shared.

Figure 5-2 Properties Dialog Box - Sharing Tab 1



NOTE: Refer to Figure 5-3 and Figure 5-4 .

5.2.6 Set the Sharing properties for xVM1 Share Folder as follows:

5.2.6.1 In the Sharing tab, click on Advance Sharing button.

5.2.6.2 In the Advance Sharing pop-up box, check the Share this folder box.

5.2.6.3 Share name field displays default name, xVM1 Share Folder.

5.2.6.4 Click OK to accept default name and close the Advance Sharing pop-up box.

5.2.7 Now, note that in sharing tab, Network Path is set to \\ADMIN-VM1\xVM1 Share Folder.

5.2.8 Click OK to close the Properties dialog box.

NOTE: Now VM1 has shared folder (xVM1 Shared Folder) which can be shared with Host Computer as well as any other Virtual Machine(s).

Figure 5-3 Properties Dialog Box - Advance Sharing Pop-up

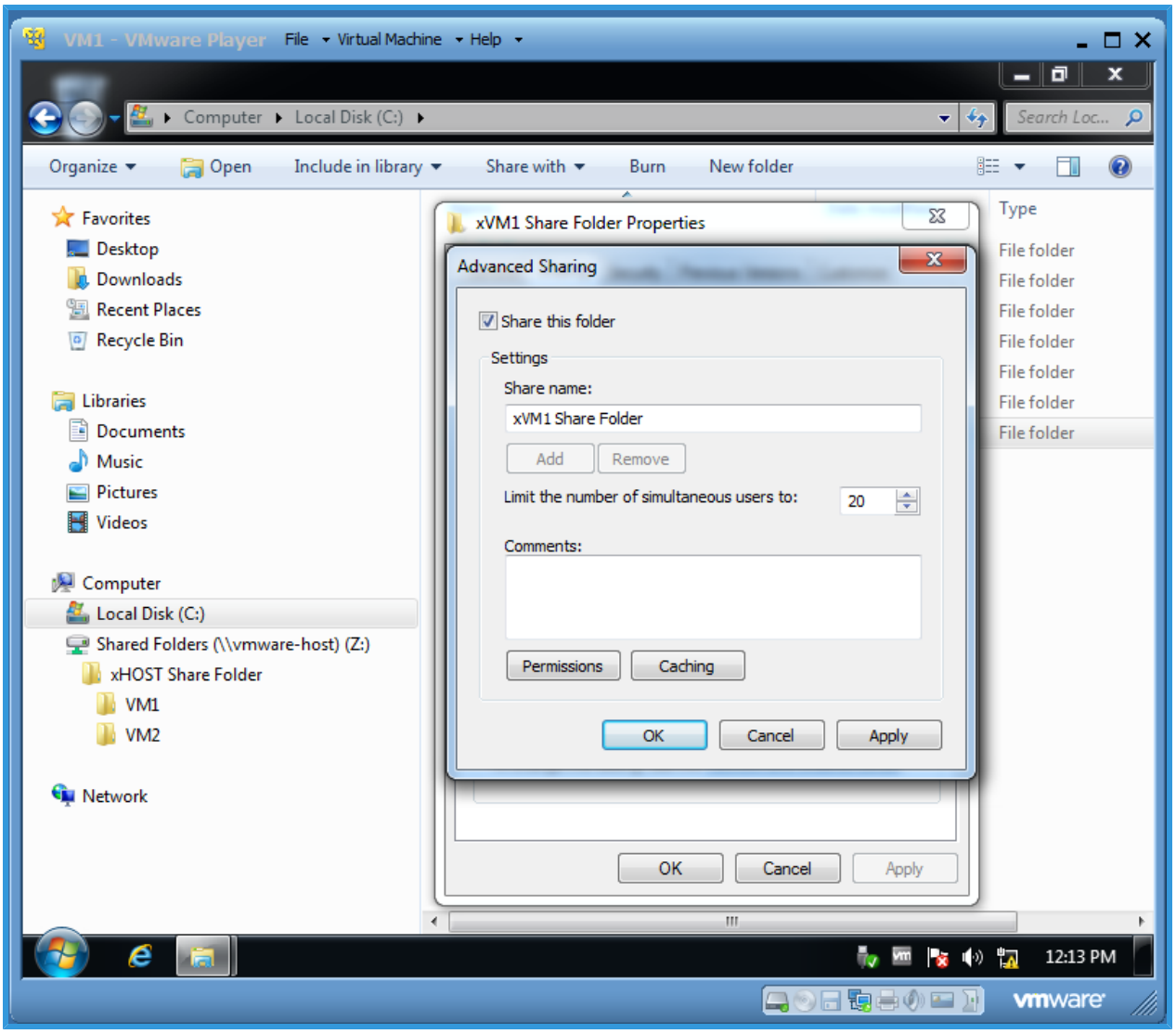
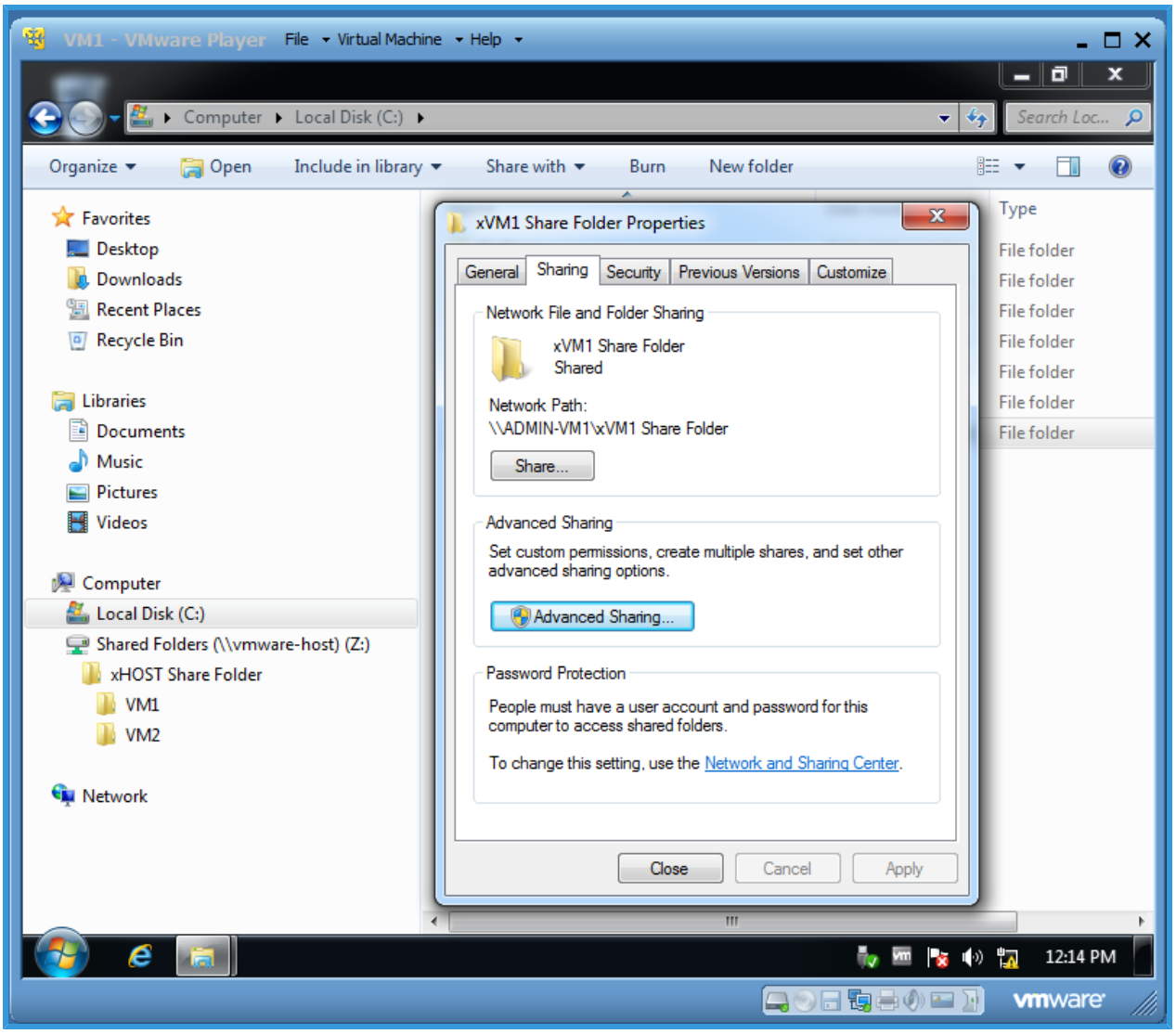


Figure 5-4 Properties Dialog Box - Sharing Tab 2



5.3 Repeat the above process for VM2, however in VM2 C:\ drive, create a new folder and name it as xVM2 Share Folder.
Note that in sharing tab, Network Path will be set to \\ADMIN-VM1\xVM2 Share Folder.

NOTE: Refer to Figure 5-5 .
Communication between VMs & Host Computer is established automatically; therefore, following section may or may not work.
In the next chapter, we will configure the VM & Host communication manually to make everything work properly.

5.4 Check the VM Shared Folder:

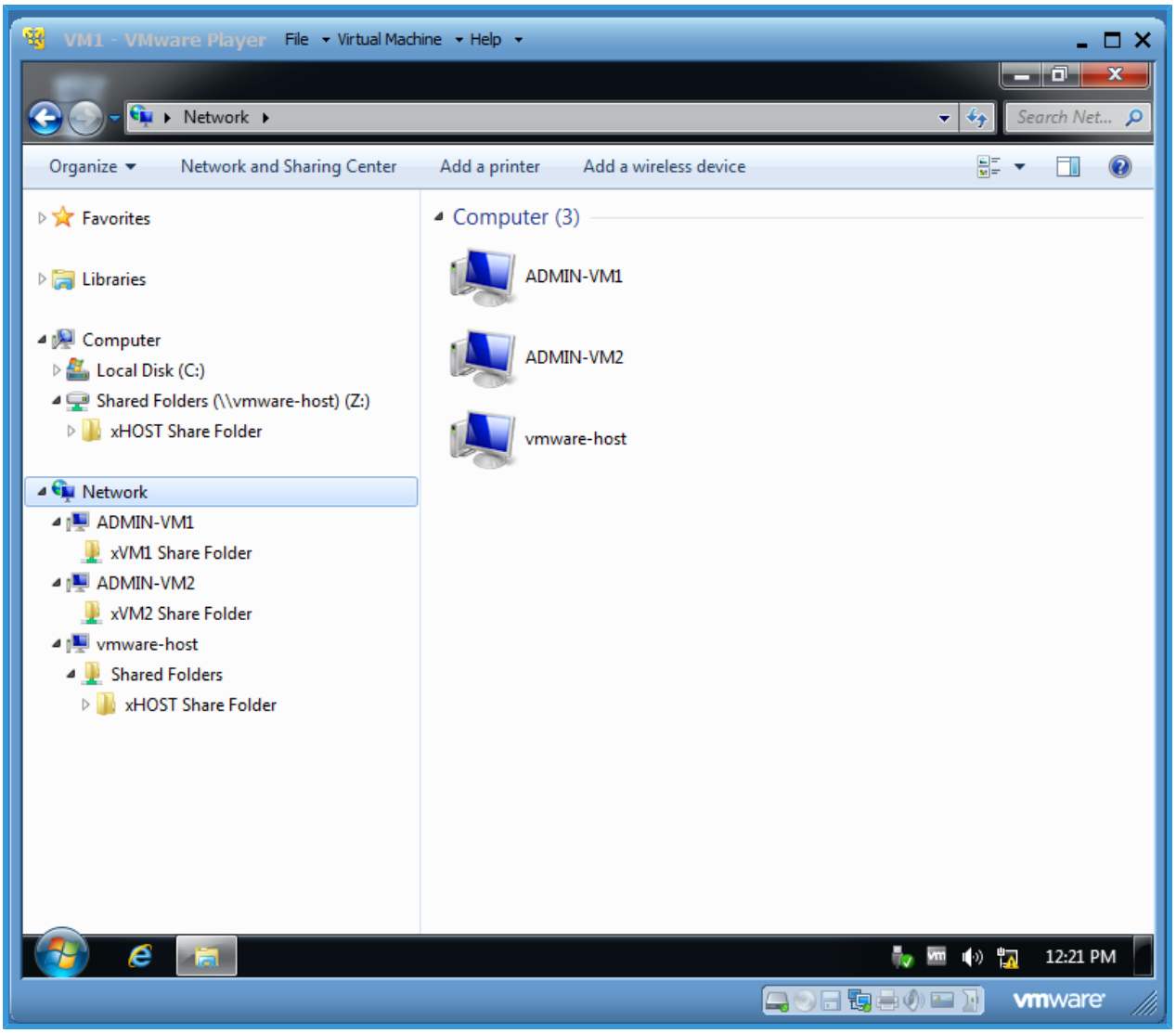
5.4.1 Restart VM1 and VM2.

5.4.2 When Windows Operating System has started, click on the Windows Explorer button to open file manager.

5.4.3 In the folder tree (on the left-side), click on Network and expand the Network section including folders and sub-folders.

5.4.4 All shared folders from VM1, VM2 and Host Computer are displayed. Now files and folders between each computer can be shared through these folders.

Figure 5-5 VM Network Folders



Section 6 - Check VM IP Address

6.1 To check VM1 IP Address, follow these steps:

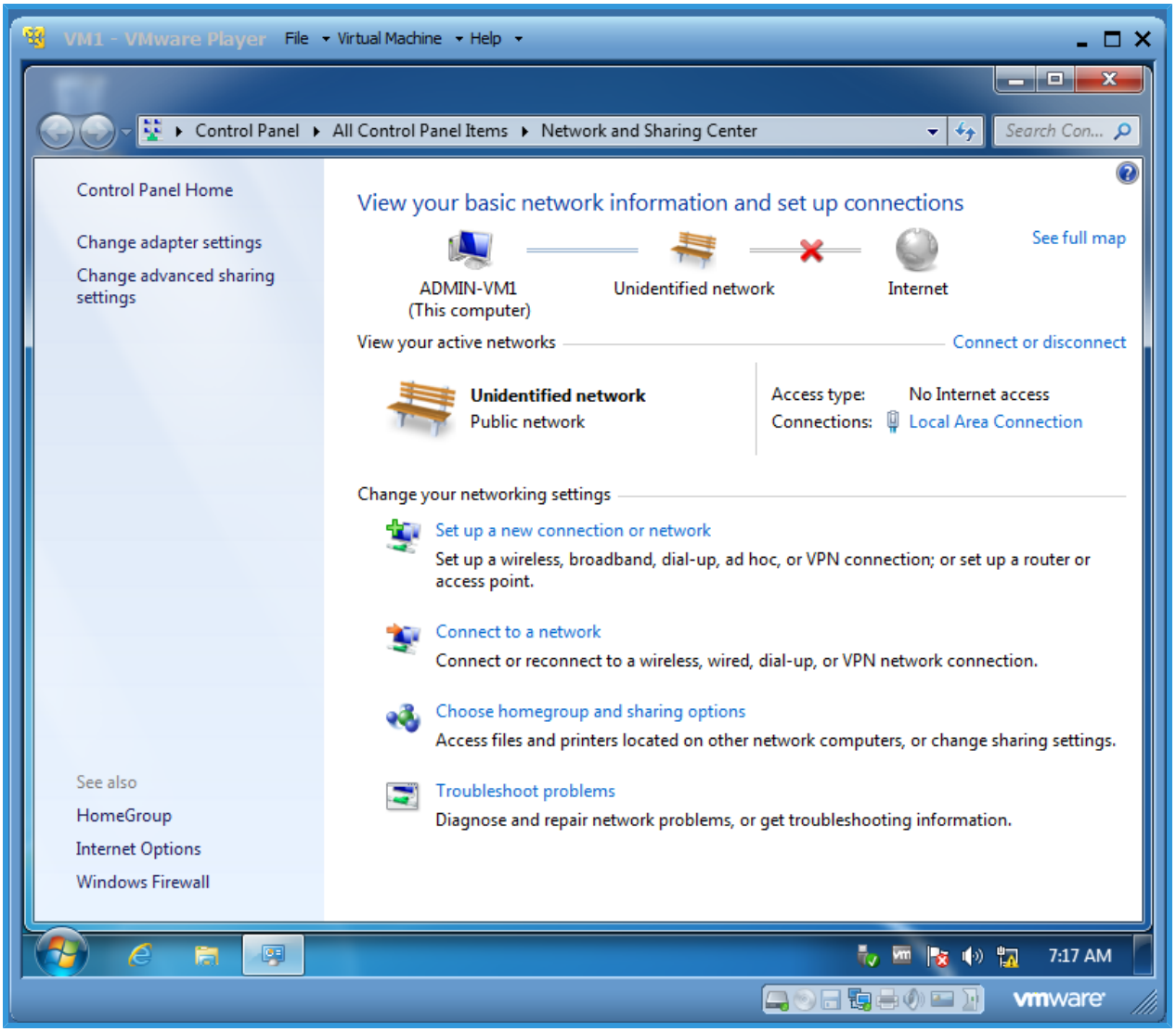
6.1.1 From the system tray, click on Network icon.

6.1.2 From the pop-up, click on the Open Network and Sharing Center link.

6.1.3 Network and Sharing Center window displays following information, see Figure 6-1 :

- Options to change Adapter Settings and Advance Sharing Settings
- List of active networks and connections to those networks
- Options to setup new networks or to make changes to existing networks

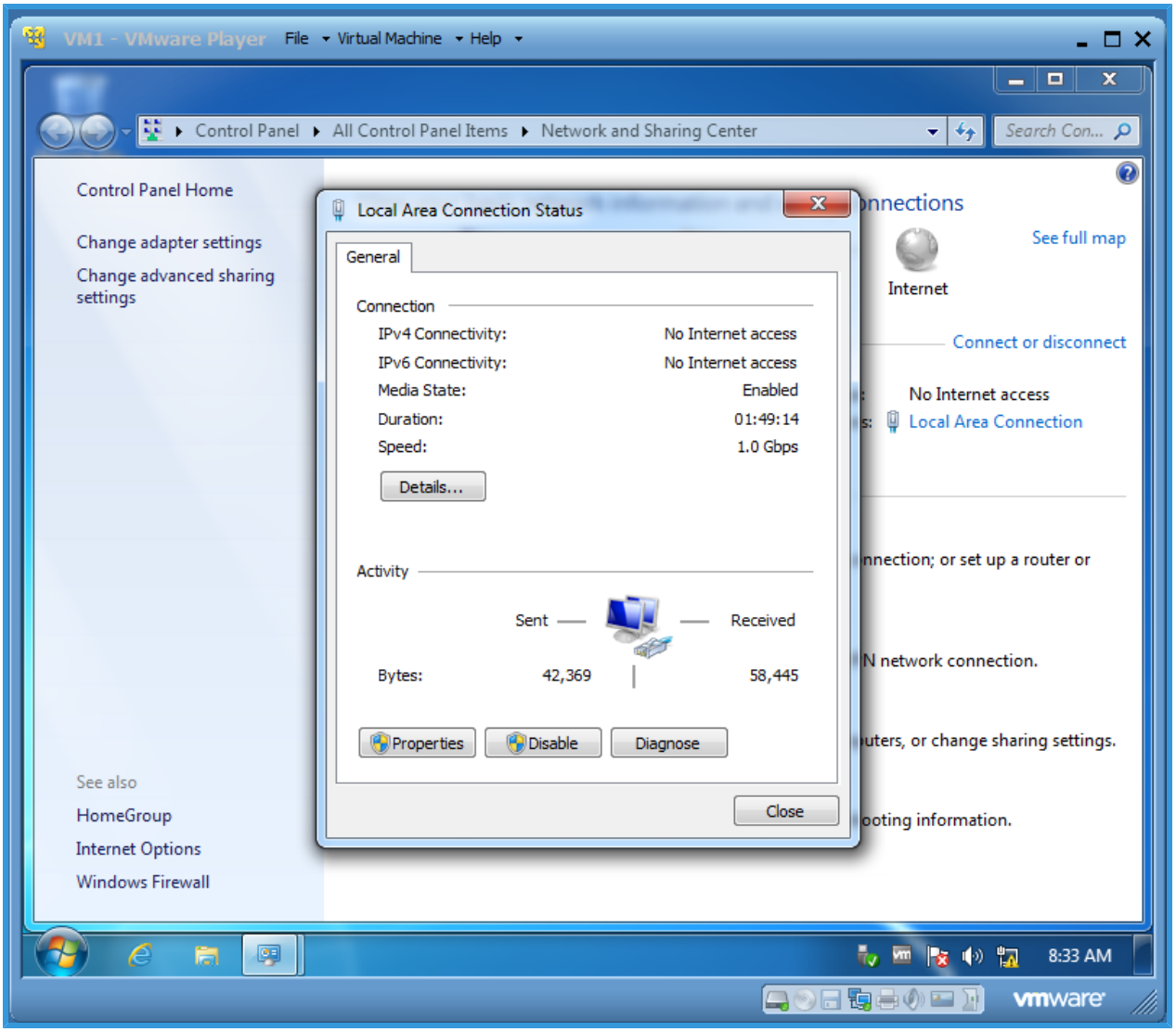
Figure 6-1 Network & Sharing Center



6.1.4 In Network and Sharing Center, from the View your active networks section, click on Local Area Connections link.

6.1.5 Local Area Connection Status dialog box displays as shown in Figure 6-2 .

Figure 6-2 Local Area Connection Status



6.1.6 Click on Details button, this will open up Network Connection Details dialog box, as shown in Figure 6-3 .

6.1.7 Note the following details:

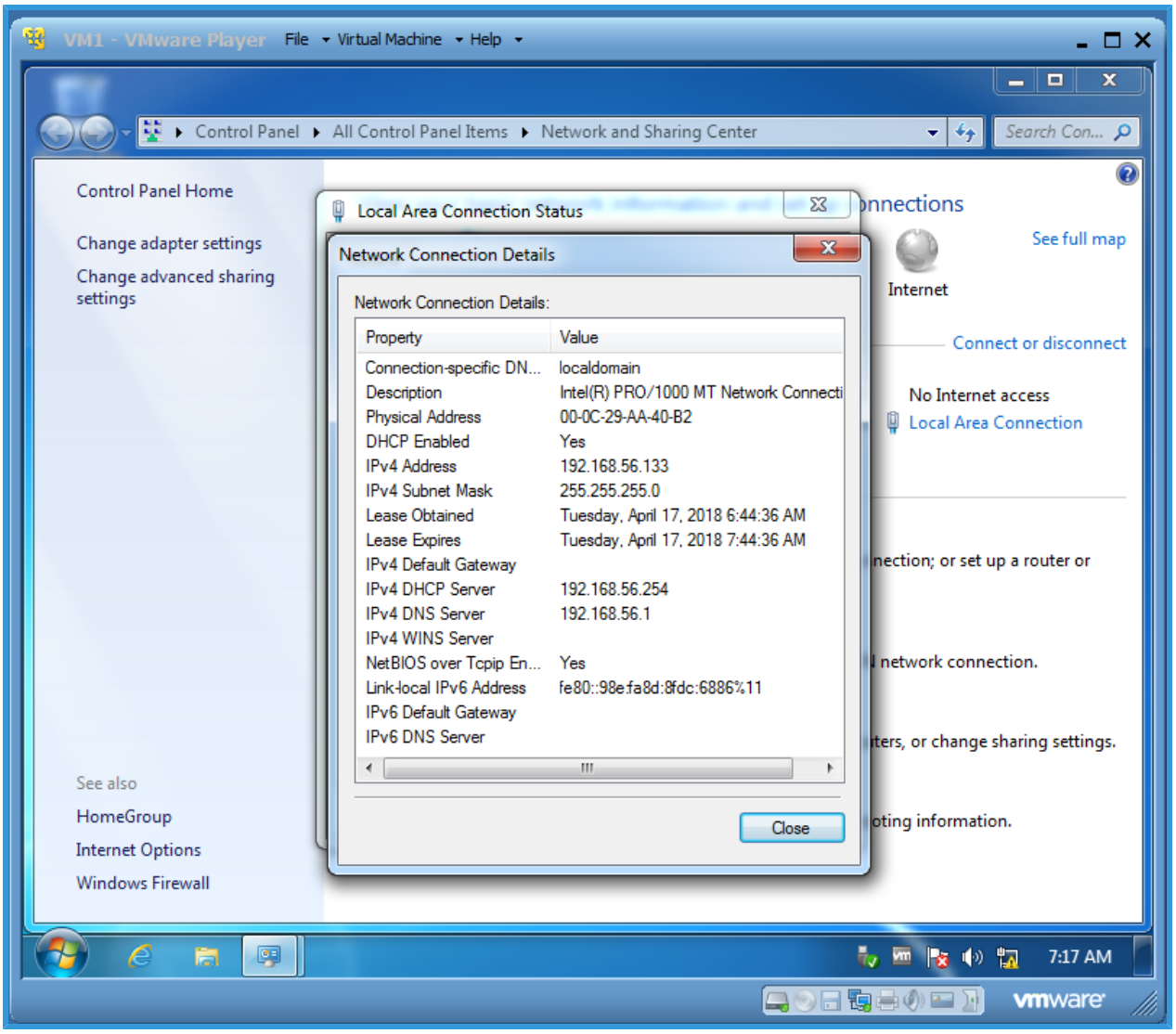
- DHCP Enabled is set to Yes, which means this IP Address is assigned dynamically (auto-assigned)

- IPv4 Address, this is the IP Address of the Computer, VM1
- IPv4 Subnet Mask, this is the Subnet Mask of the Computer, VM1

6.1.8 Close Network Connection Details and Local Area Connection Status dialog boxes.

6.1.9 Finally, close the Network and Sharing Center window.

Figure 6-3 Network Connection Details



6.2 Repeat the above process to check IP Addresses of VM2 and Host Computer.

NOTE: Network Connection Details for VM2 and Host Computer, refer to images below.

Figure 6-4 VM2 Network Connection Details

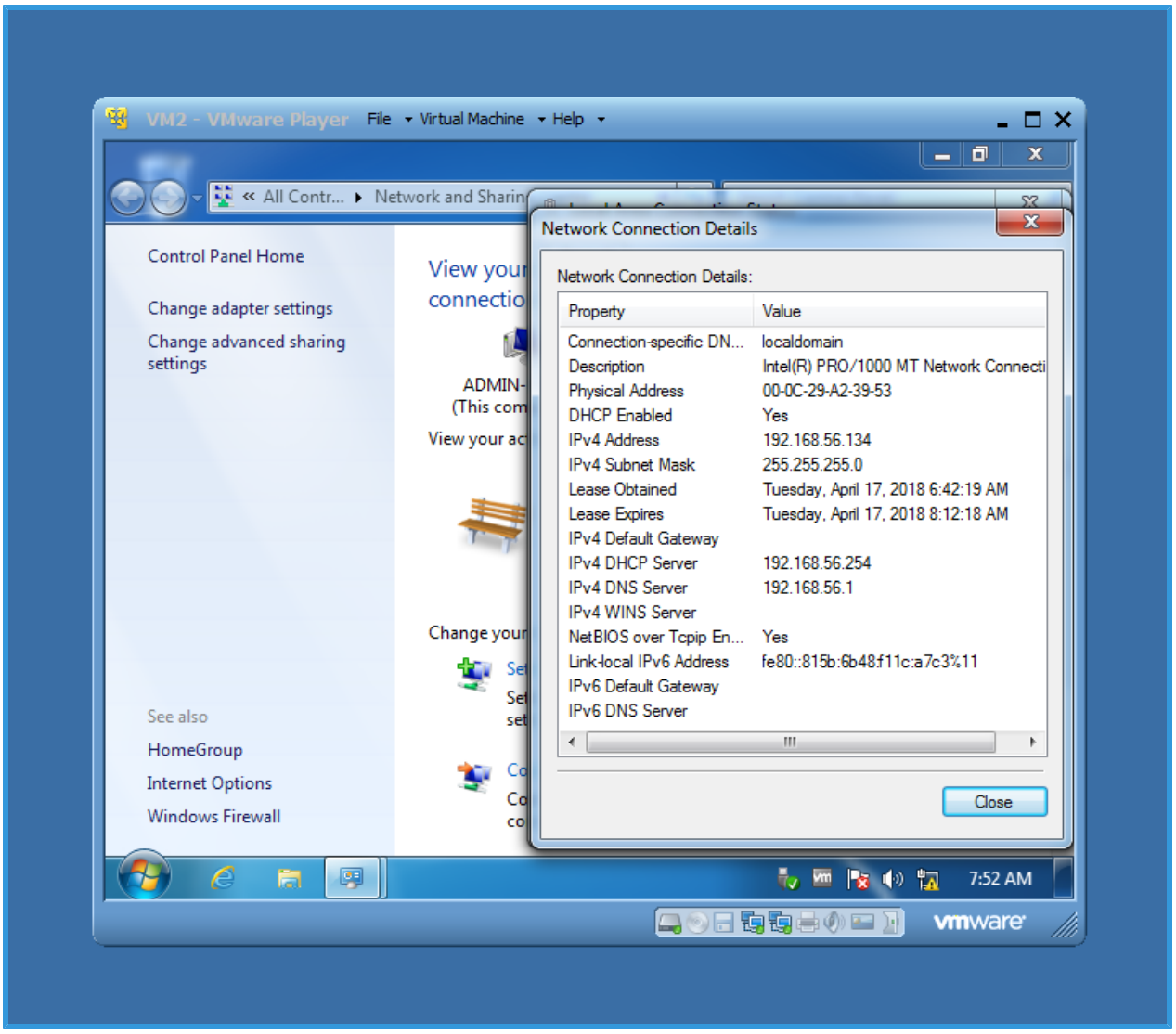
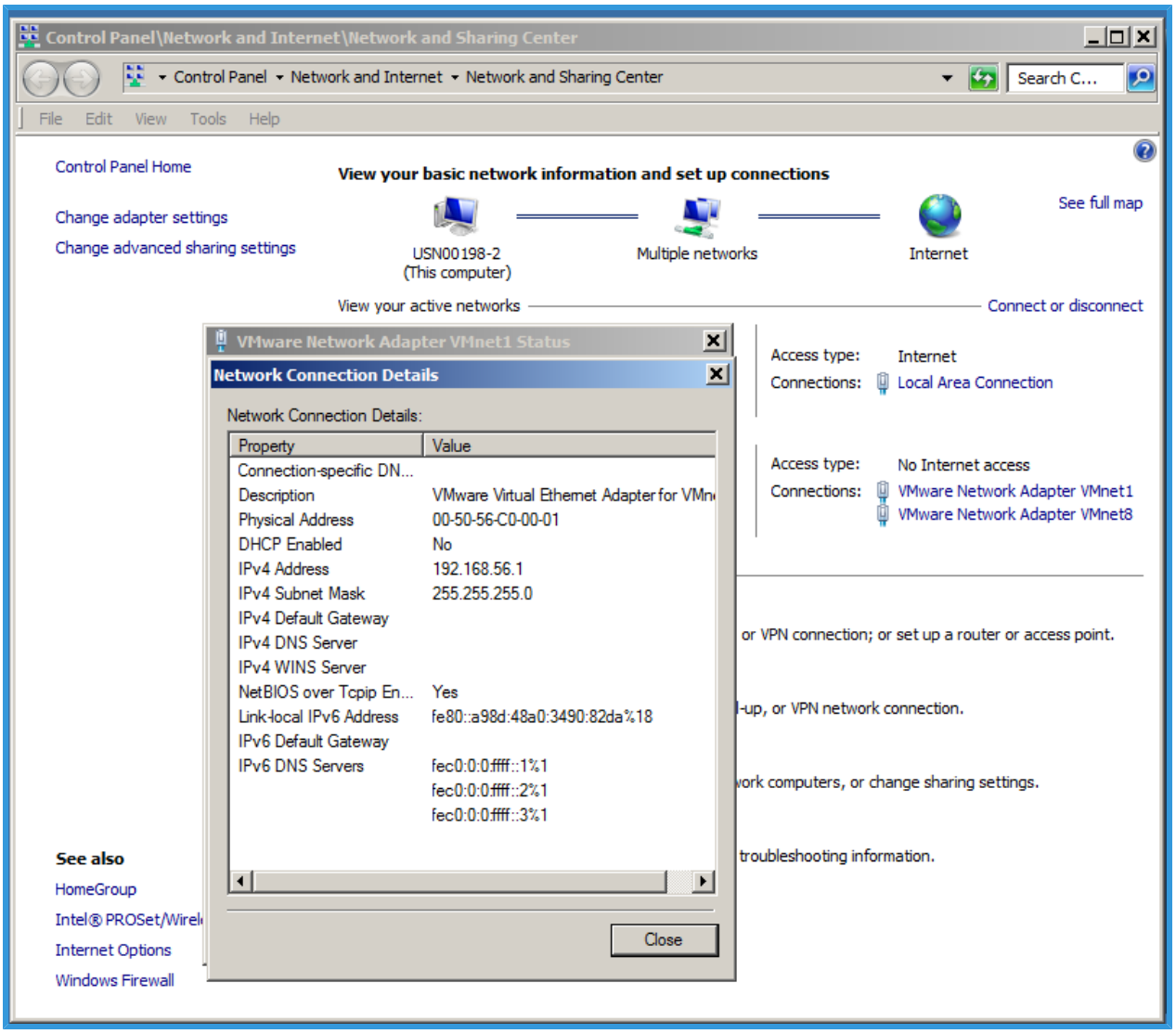


Figure 6-5 Host Computer - Network Connection Details



Section 7 - Change VM IP Address

NOTE: For additional information about images, refer to the Section 6 - .

7.1 To change VM1 IP Address, follow these steps:

7.1.1 From the system tray, click on Network icon.

7.1.2 From the pop-up, click on the Open Network and Sharing Center link.

7.1.3 Network and Sharing Center window displays following information.

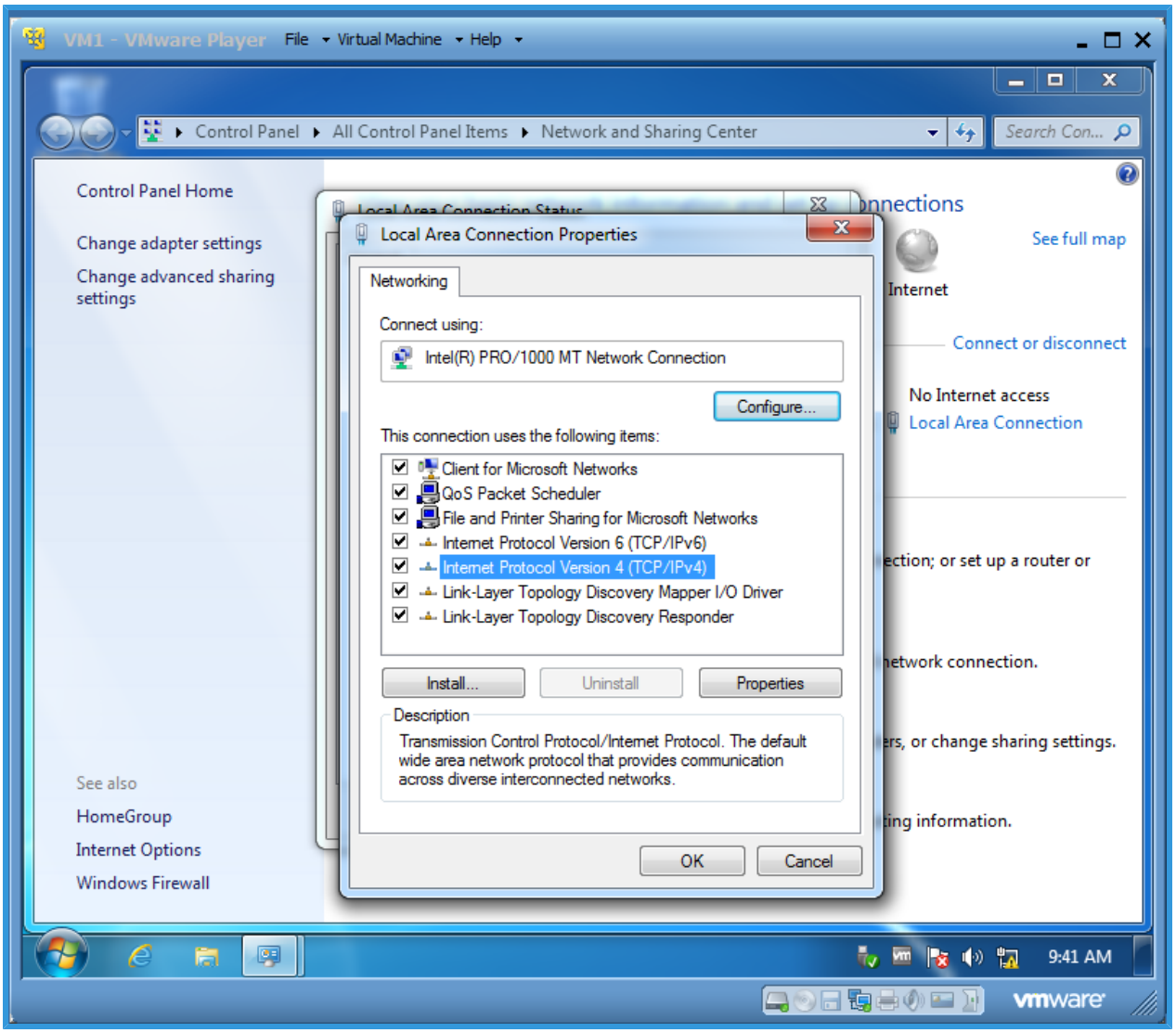
- Options to change Adapter Settings and Advance Sharing Settings
- List of active networks and connections to those networks
- Options to setup new networks or to make changes to existing networks

7.1.4 In Network and Sharing Center, from the View your active networks section, click on Local Area Connections link.

7.1.5 Local Area Connection Status dialog box displays.

7.1.6 Click on Properties button, this will open up Local Area Connection Properties dialog box, as shown in Figure 7-1 .

Figure 7-1 Local Area Connection Properties



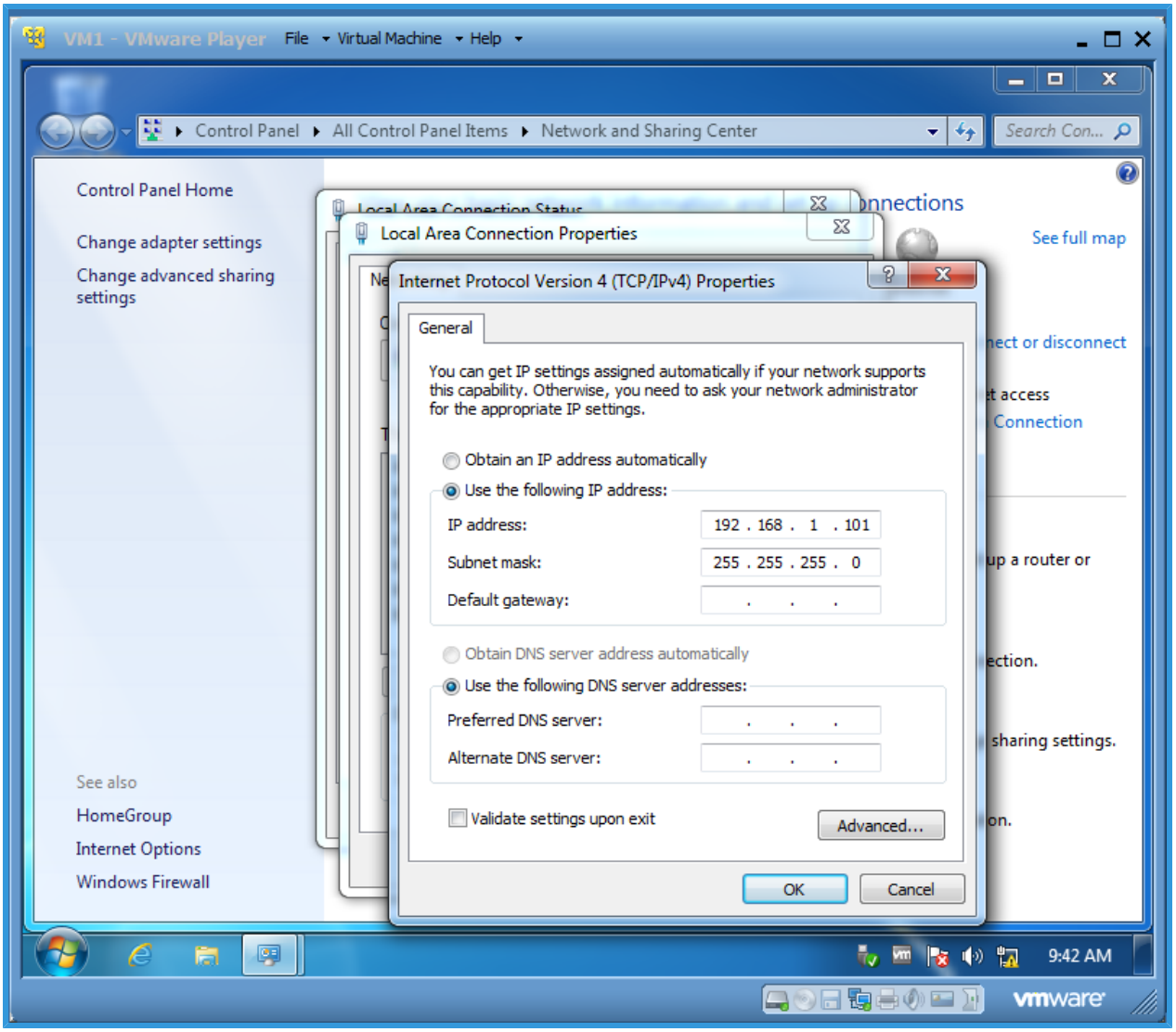
7.1.7 From the Local Area Connection Properties dialog box, select Internet Protocol Version 4 (TCP/IPv4) and then click on Properties button.

7.1.8 Internet Protocol Version 4 (TCP/IPv4) Properties dialog box displays. In General tab, make the following changes (see Figure 7-2):

1. Click on Use the following IP Addresses option
2. Set IP Address to 192.168.1.101
3. Set Subnet Mask to 255.255.255.0
4. Click OK to save the settings and close the IPv4 Properties dialog box.

7.1.9 Close all the dialog boxes and the Network and Sharing Center window.

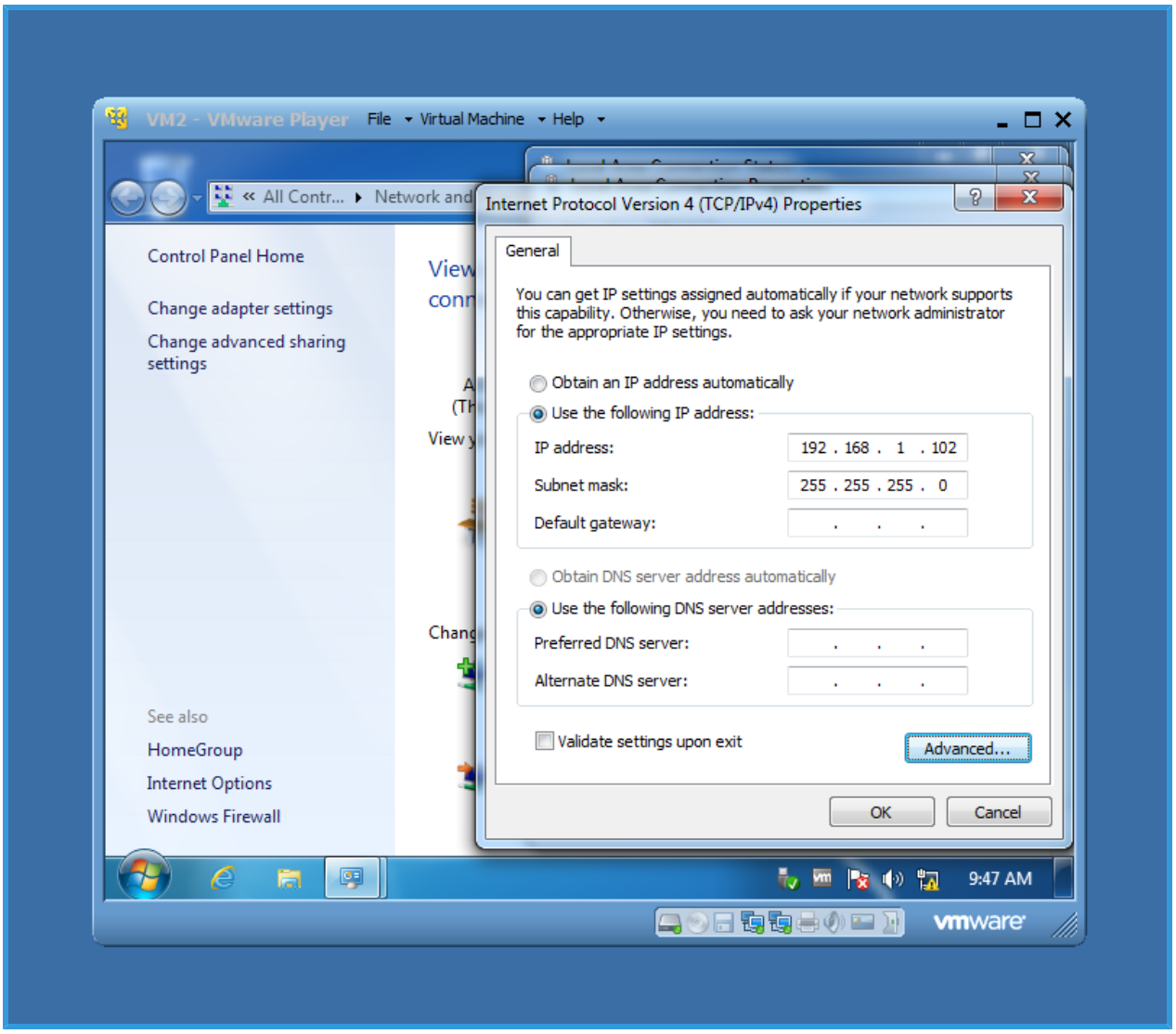
Figure 7-2 IPV4 Properties for VM1



7.2 Repeat the above process to change IP Address for VM2, (see Figure 7-3).

NOTE: In VM2, set IP Address to 192.168.1.102 and set Subnet Mask to 255.255.255.0

Figure 7-3 IPV4 Properties for VM2



For VMs to communicate with each other, following requirements must match:

- First three Octates of IP Address (192.168.1)
- All four Ocates of Subnet Mask (255.255.255.0)
- Last Octate of the IP Address must be different

These matched IP Address octates (and Subnet Mask) indicates that both VMs are located on the same network.

Section 8 - Check VM Communication

8.1 In this section, we will use Command Line instructions IPCONFIG and PING.

- IPCONFIG is used to view the IP Address related information of the present Computer
- PING command is used to check the communicate with other Computer.

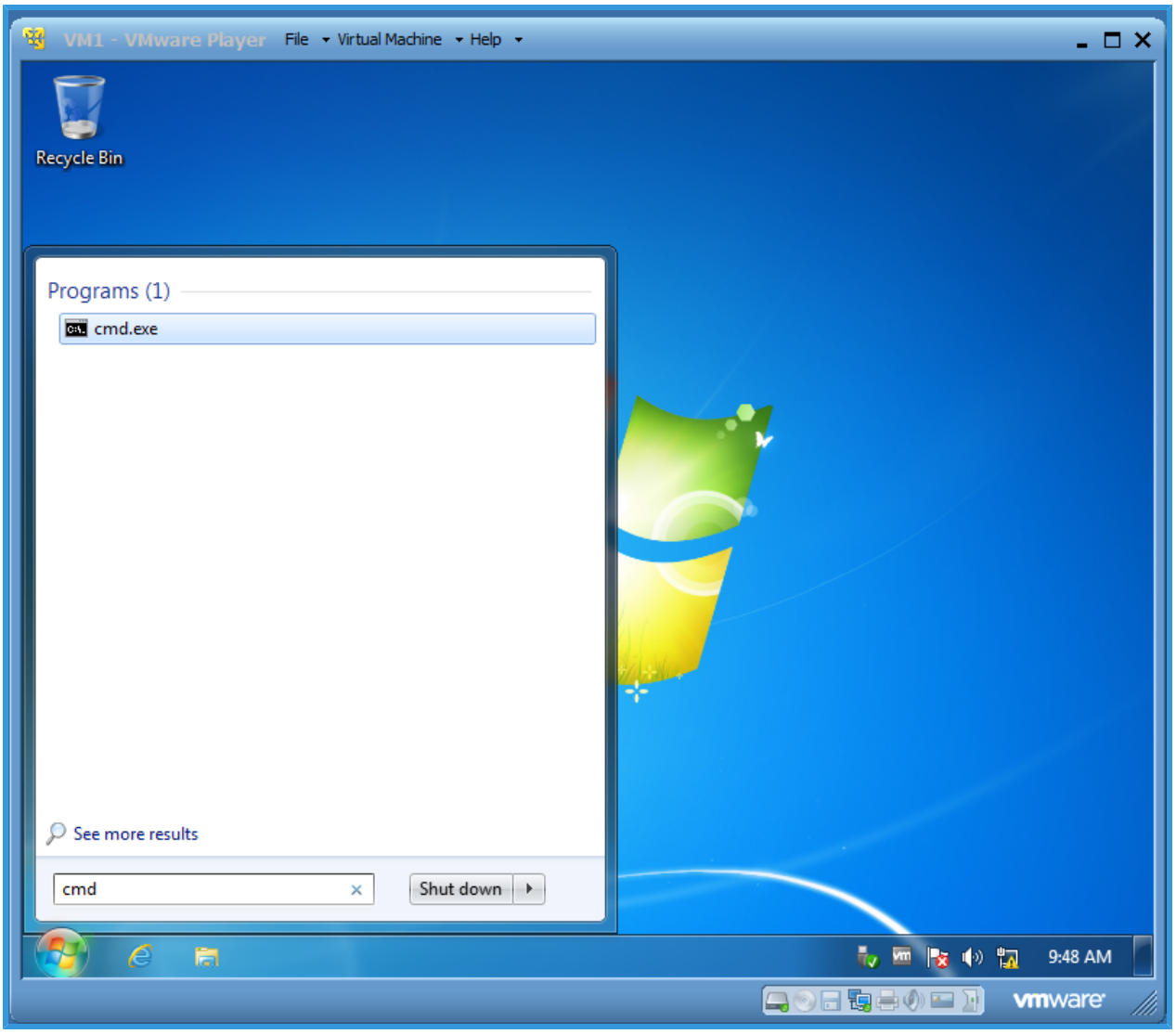
NOTE: Refer to Figure 8-1 .

8.1.1 In Windows Operating System, click on the Start button.

8.1.2 In the search box, type-in CMD, then from search result, click on cmd.exe to open the Command Prompt.

8.1.3 Dos Command Prompt will open in a new window.

Figure 8-1 Search for Command Prompt



8.2 IPCONFIG - View IP Address Information (see Figure 8-2 and Figure 8-3).

8.2.1 At the DOS command prompt, type-in ipconfig and press Enter (or Return) key.

8.2.2 Check the Ethernet Adapter Local Area Connection information.

- Displays IPv6, IPv4, Subnet Mask and Default Gateway information
- Also displays other Local Area Connection information

NOTE: If you are connected to your network through Wireless Connection or Wifi, it should also be listed here. Alternatively, you an also type-in ipconfig /all command, to display detailed information about the Windows IP Configuration.

8.2.3 Repeat the above steps to display IP Address information for VM1, VM2 and Host Computer.

Figure 8-2 IPCONFIG - VM1

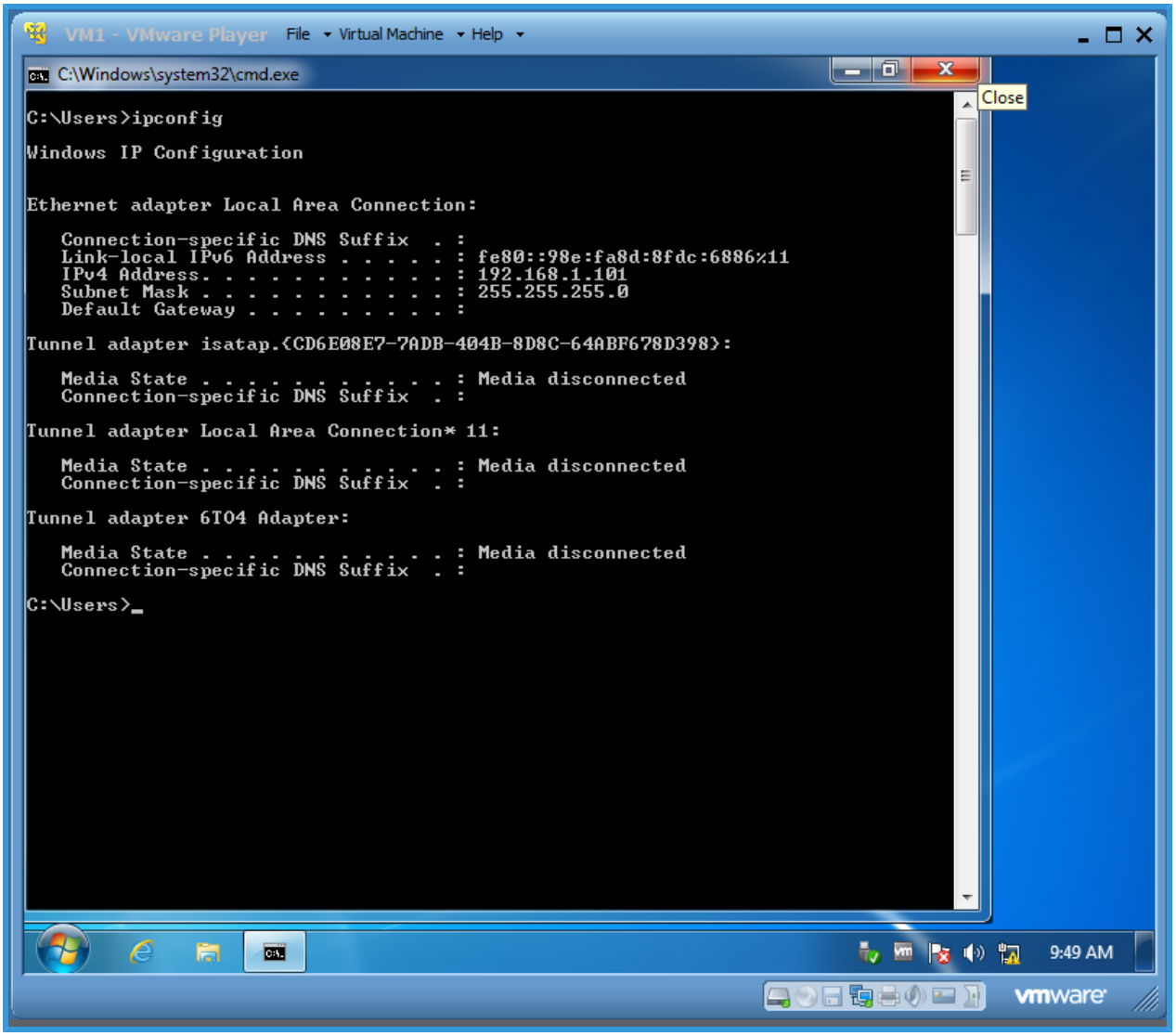
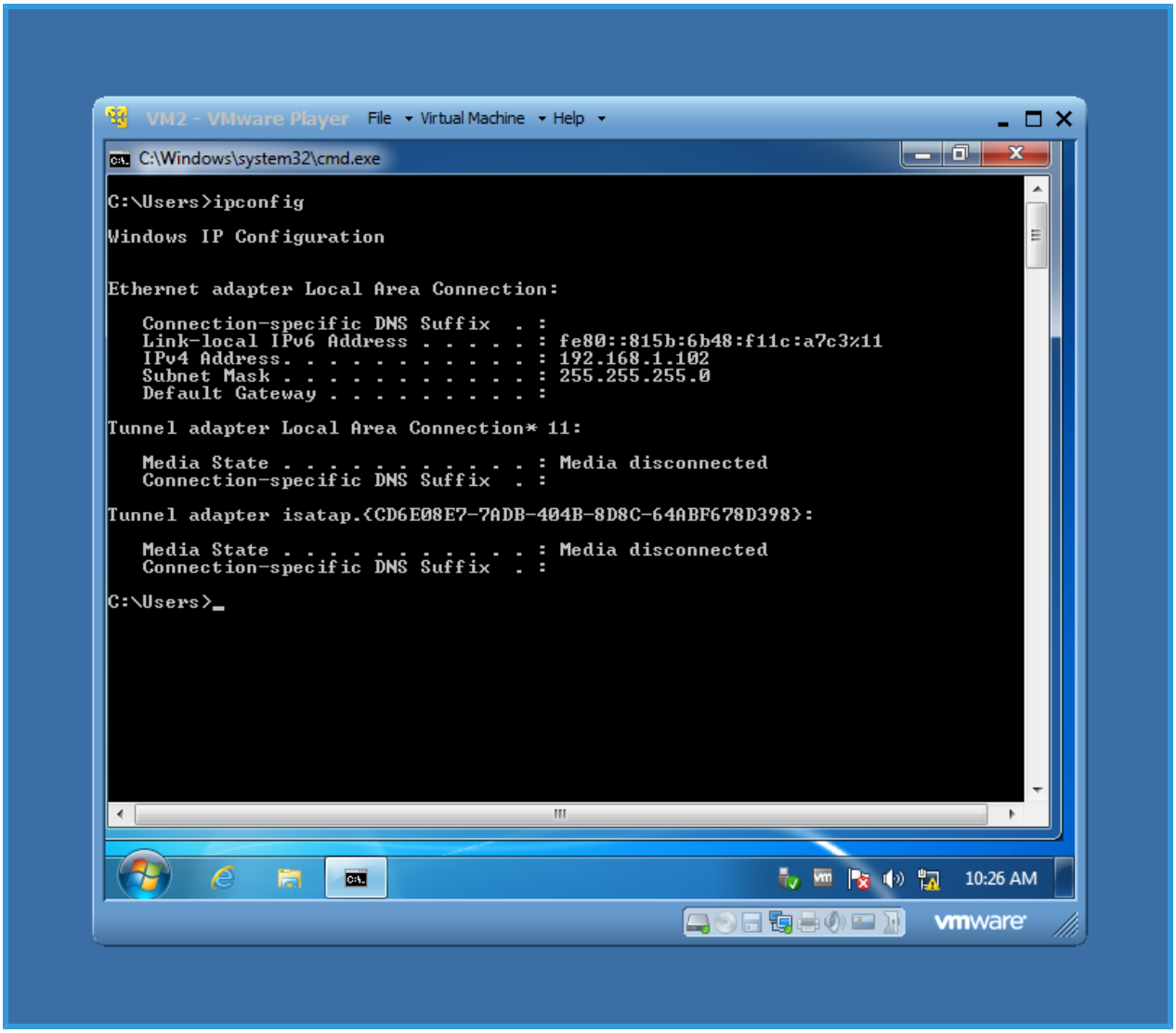


Figure 8-3 IPCONFIG - VM2



8.3 PING - Check Communication (see Figure 8-4 and Figure 8-5).

8.3.1 To check communication from VM1 to VM2:
In VM1, at the DOS command prompt, type-in ping 192.168.1.102, then press Enter (or Return) key.

NOTE: VM1 will send Test Packets to VM2. Upon successful communication, Packets Sent equals to Packets Received, and Packets Lost is Zero.
As shown in our example Packets Sent = 4, Packets Received = 4 and Packets Lost = 0.

8.3.2 To check communication from VM2 to VM1:
In VM2, at the DOS command prompt, type-in ping 192.168.1.101, then press Enter (or Return) key.

NOTE: VM2 will send Test Packets to VM1. Upon successful communication, Packets Sent equals to Packets Received, and Packets Lost is Zero.
As shown in our example Packets Sent = 4, Packets Received = 4 and Packets Lost = 0.

Figure 8-4 PING - VM1

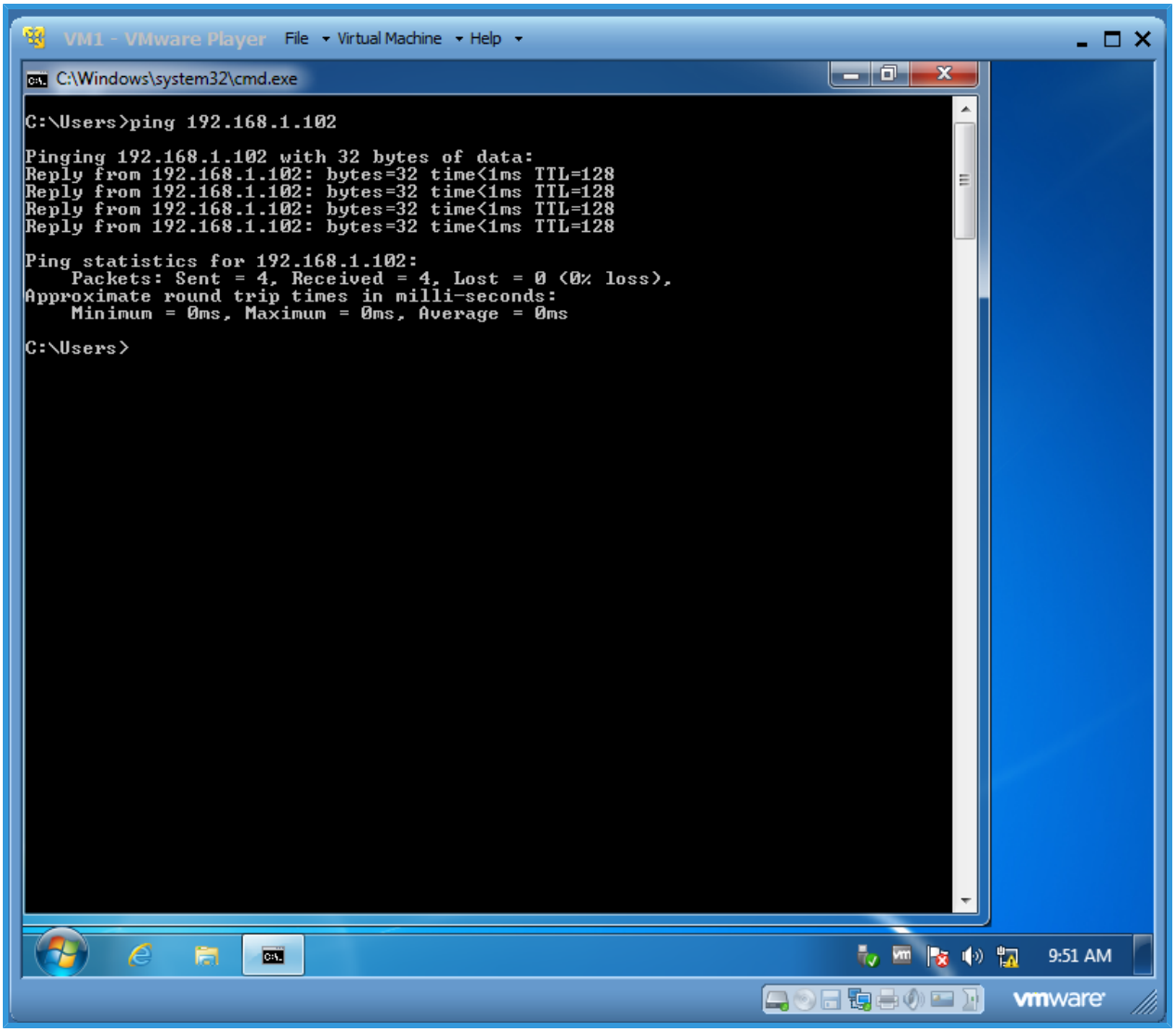
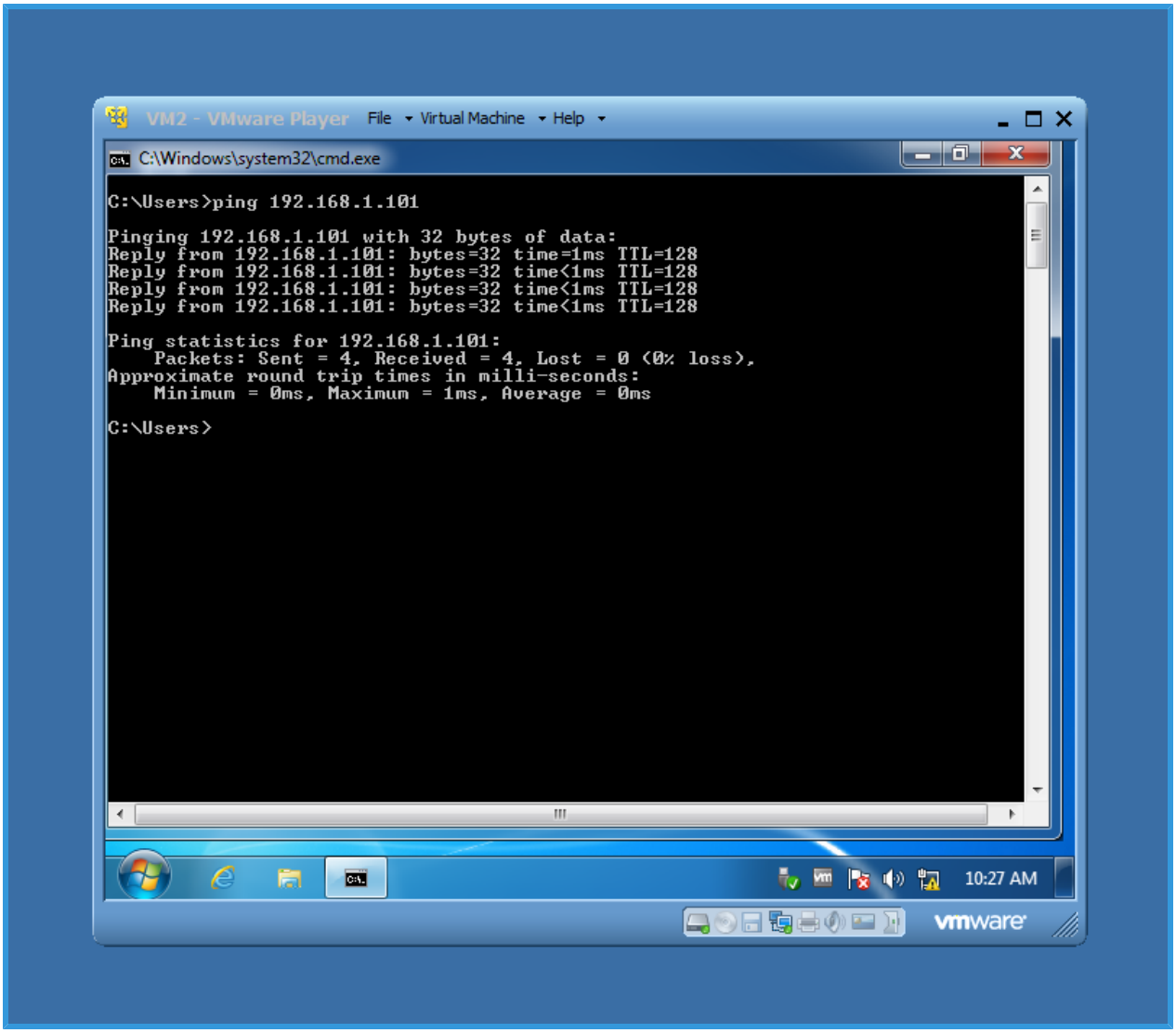


Figure 8-5 PING - VM2



8.4 Repeat the above process to change check the communication between VM1 to Host Computer and VM2 to Host Computer.

Section 9 - VMware Networking

NOTE: Refer to Figure 9-1 . Communication between VMs & Host Computer is manually established and reviewed, therefore, Network is working and ready to use.

9.1 Restart Host Computer and then restart VM1 and VM2.

9.2 Check the VM1 Shared Folder:

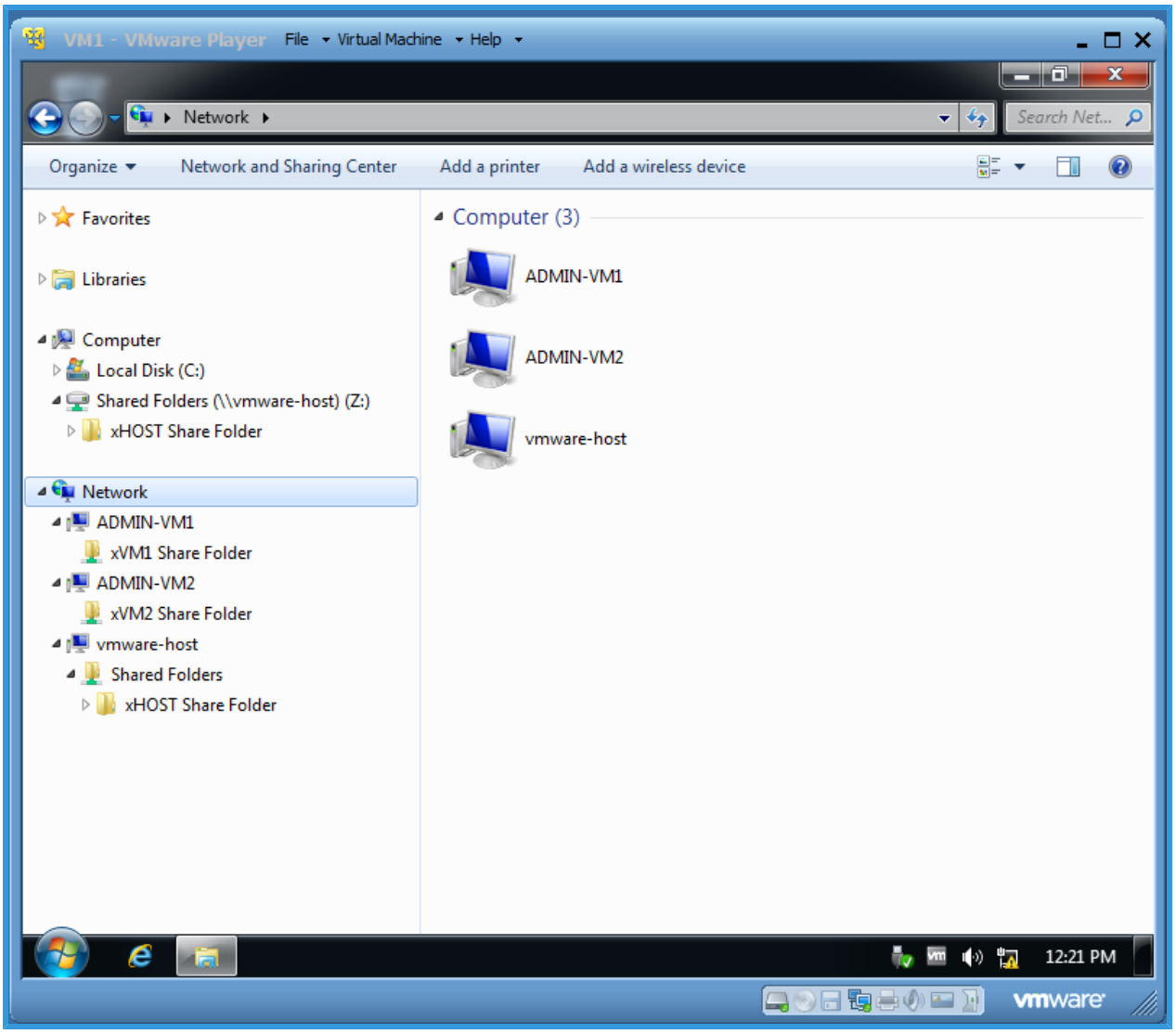
9.2.1 When Windows Operating System has started, click on the Windows Explorer button to open file manager.

9.2.2 In the folder tree (on the left-side), click on Network and expand the Network section including folders and sub-folders.

9.2.3 All shared folders from VM1, VM2 and Host Computer are displayed. Now files and folders between each computer can be shared through these folders.

NOTE: For any reason, if VMware Networking is not communicating then refer to Section 7 - and make sure IPCONFIG and PING commands are working as expected. Furthermore, refer to Section 7 - in order to make any necessary changes in IP Address.

Figure 9-1 VM Network Folders



9.3 Repeat the above process to view Network folder and available networks of VM2 and Host Computer.