Installation and Setup Guide

to “Diana”

SUNDE VDI Cloud Computing Terminal

SUNDE VDI solution is achieved by running desktop virtualization software vPoint together with Virtualization software like VirtualBox. It does not require any third party VDI software or GPU hardware configuration, but only needs SUNDE-VDI protocol, which is part of SUNDE VDI solution. Now users can experience perfect, smoothest desktop virtualization with the help of SUNDE Diana, a cloud terminal with only 5W power consumption.

1 Configuration requirements on Host PC (or Server) hardware

The configuration of hardware of Host PC (Server), which is going to host virtual machines designated for SUNDE VDI solution, needs to support **64bit operating systems** and **VT (Virtualization Technology).** The size of RAM is decided by the numbers of virtual machines to be created on the Host PC (Server). For a 10 virtual machines host, If 512Mb to 1024Mb memory is going to be assigned for each virtual machine, an amount of 8Gb to 12Gb RAM in total shall be installed on the Host PC (Server). SSD (Solid State Drive) is recommended for faster storage if the number of virtual machines to be created is above 5. SSD will house both the 64bit operation system and virtual machines for higher performance.

2 The installation of vPoint 1.0.0.31 version

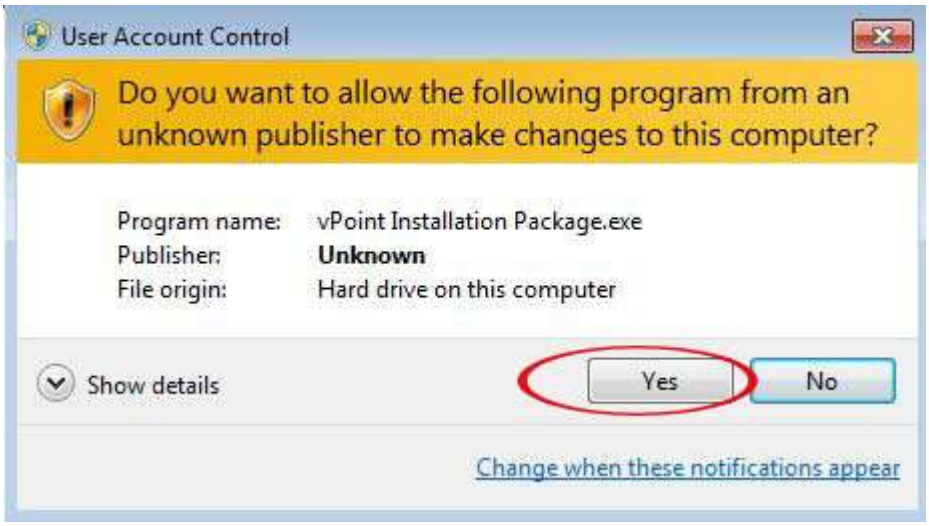
2.1 The installation of vPoint 1.0.0.31

Before installing vPoint, 64bit operation system (namely 64bit version of Windows 7 or Windows 2008R2) shall have been already installed on the Host PC (Server).

Go to the location where vPoint Installation Package resides, double click it. See Picture 1：

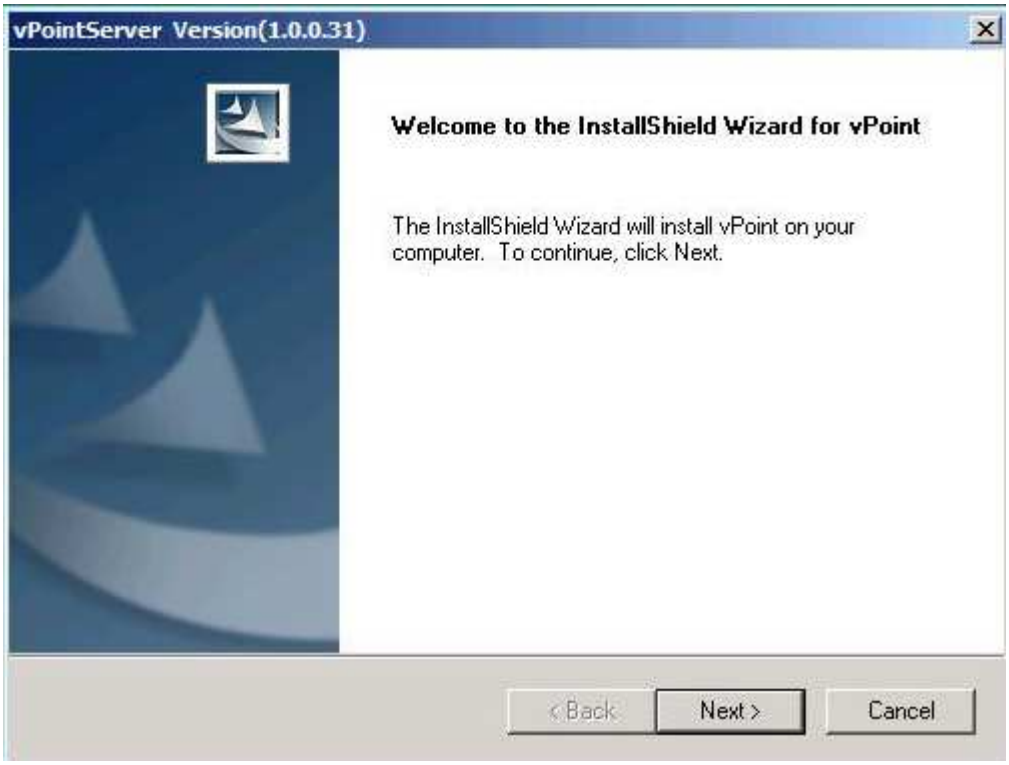
1

In the popping up "User Account Control", choose "Yes". See Picture 2：



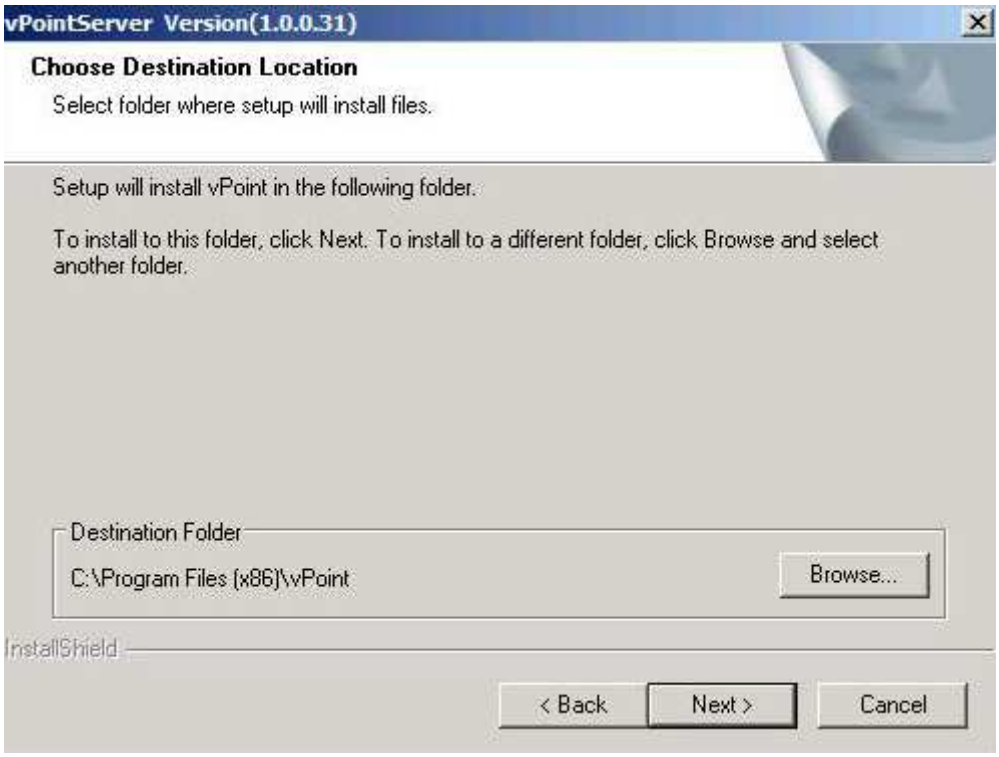
2

Click "Next", Picture 3：



3

Choose Destination Location. We can use the default. Picture 4：



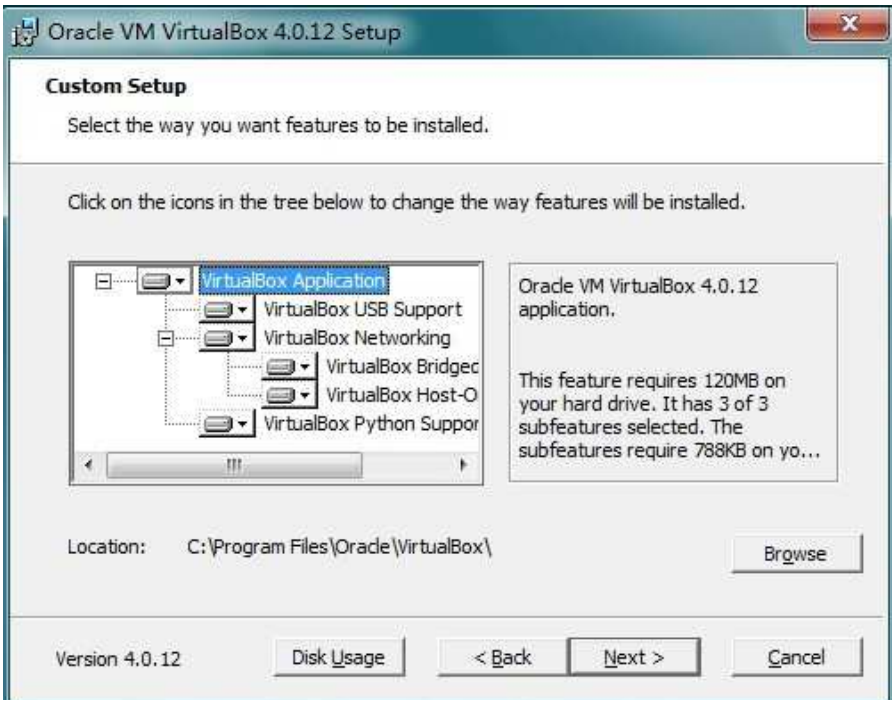
4

When "Oracle VM VirtualBox 4.0.12 Setup" pops up, click "Next" to continue. Picture 5：

5

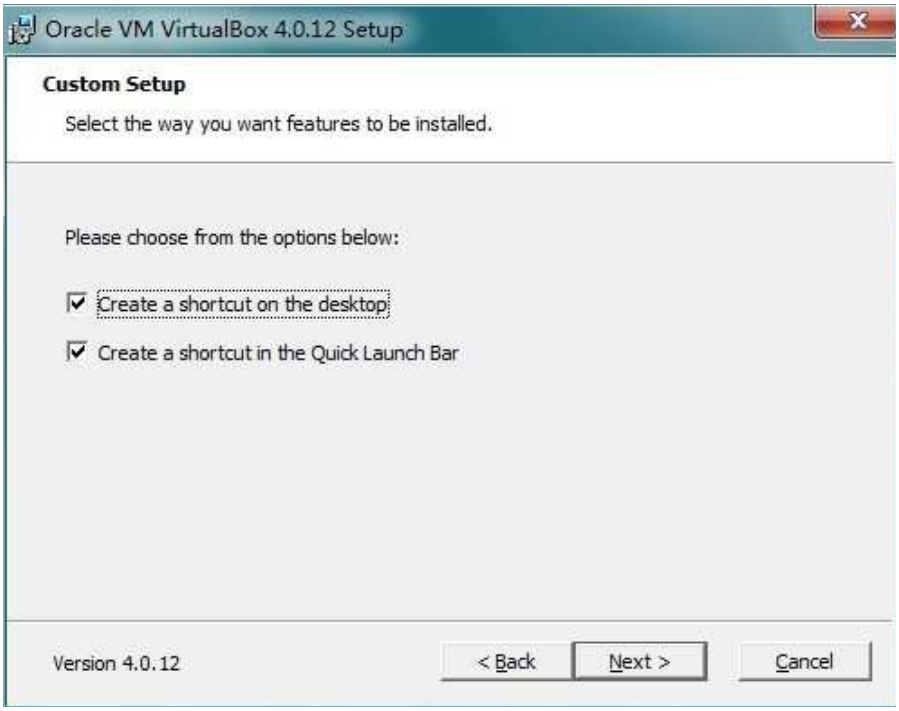
Please NOTE: vPoint supports only VirtualBox 4.0.12, please do not use other lower version, or upgrade it to higher version.

Settings of Virtual Box installation: just use default settings. Click “Next” to continue. Picture 6：



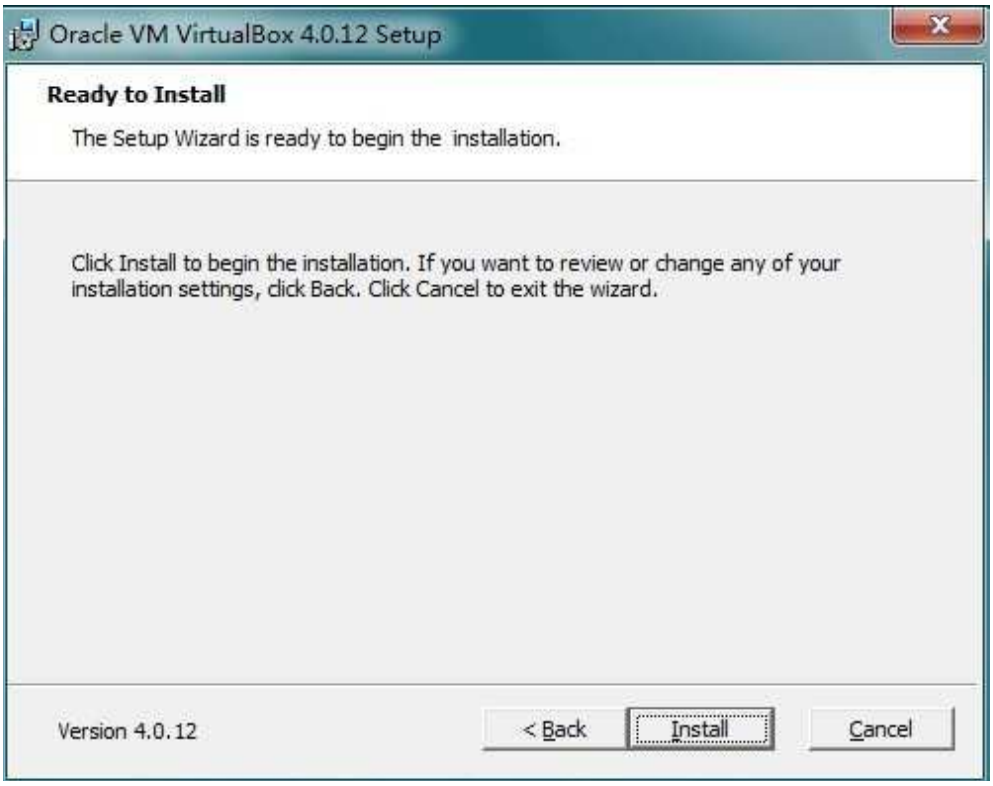
6

Also using defaults. Click “Next”. Picture 7：



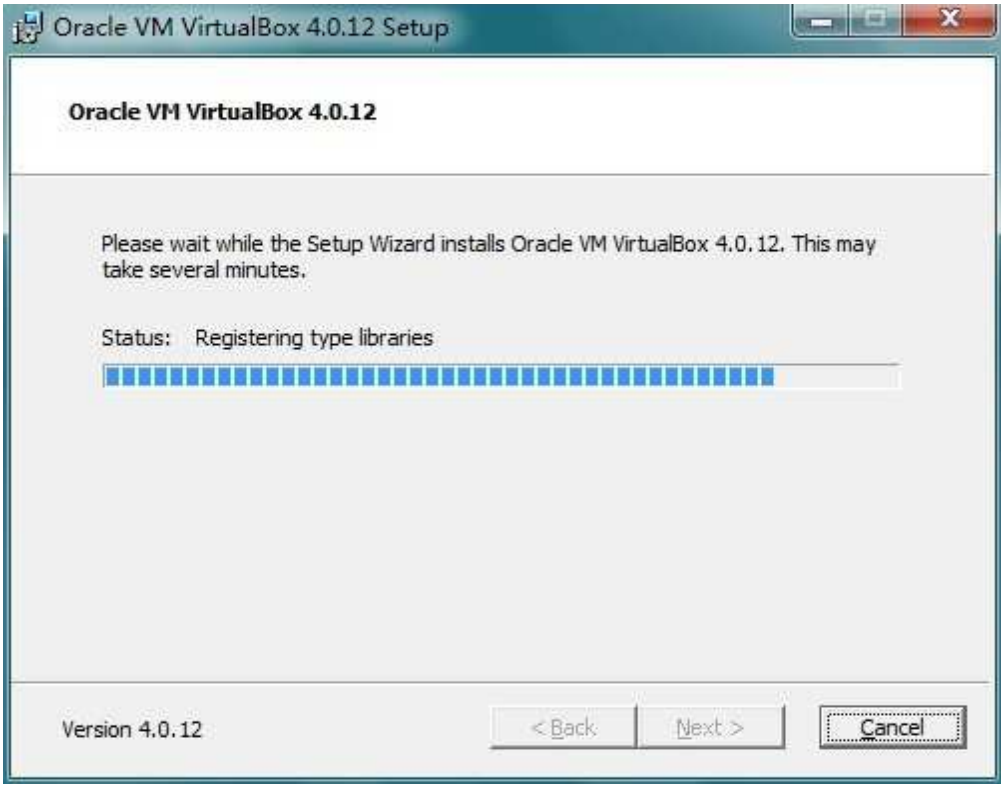
7

Click “Install”， the installation of VirtualBox will start. Picture 8：



8

Installing…. Picture 9：

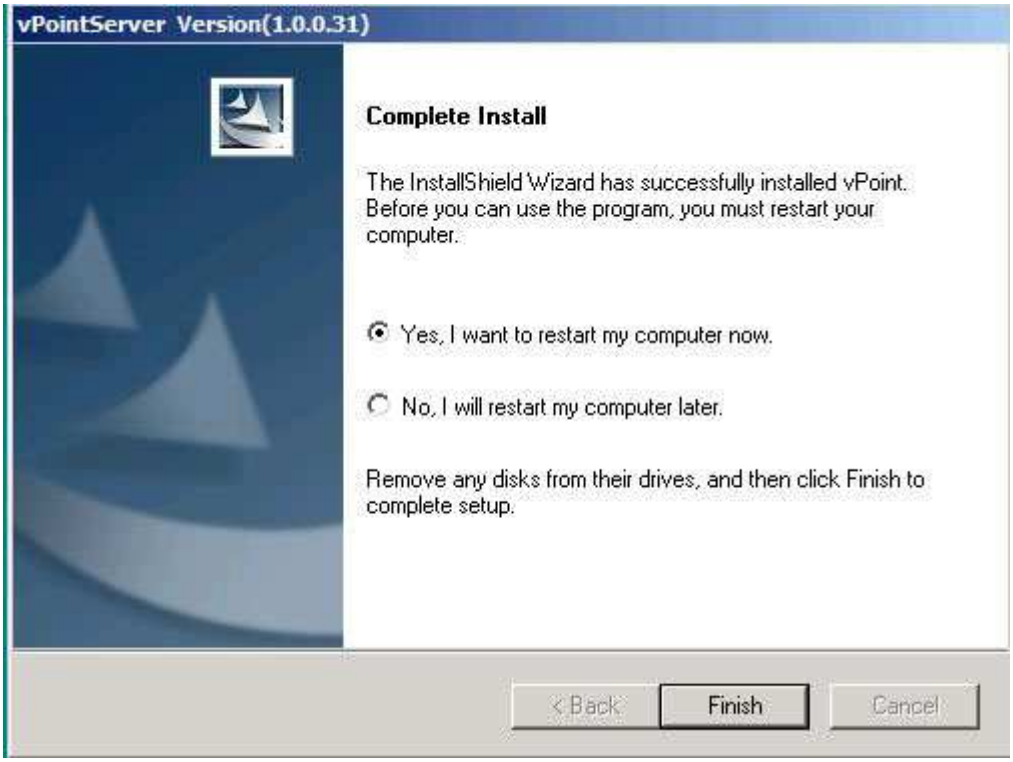


9

Uncheck “Start Oracle VM VirtualBox 4.0.12 after installation”, and then click “Finish”.

10

Wait till vPoint installation completes, then click “Finish” to restart the computer. Picture 11：



11

After system reboot, you can see "vPoint Management Center" and "VirtualBox" shortcuts on desktop. See Picture 12:

12

<u>Attention：</u> vPoint Currently only support this version (4.0.12) of virtualbox packed in vPoint Installation Package. Do not upgrade it to any higher version!

2.2 Installation of extension pack for VitualBox:

If we want to enable USB2.0 controller for virtual machines, we need to install an Extension Pack for VirtualBox first. A warning message will show up if we choose to enable USB 2.0 controller for the virtual machine before installing the Extension Pack:

13

Download the extension pack from this webpage:
https://www.virtualbox.org/wiki/Download_Old_Builds_4_0

14

The file name is: ***Oracle_VM_VirtualBox_Extension_Pack-4.0.12-72916.vbox-extpack***

After downloading the extension pack file, double click it to run the installation.

15

Then follow the steps to finish the installation

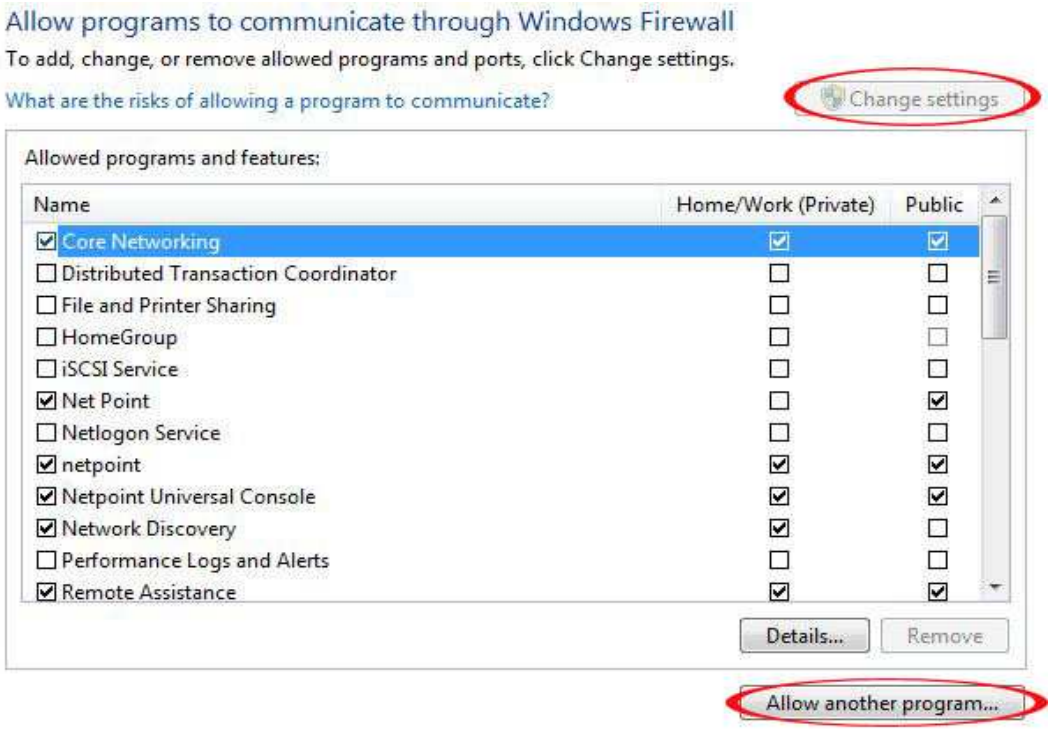
Firewall Settings:

To prevent Windows Firewall blocking the data transmitting between the host and Diana terminals, we need to make some settings in the firewall.

Go to “Control Panel”, then “All Control Panel Items”, “Windows Firewall”. Choose “Allow a program or feature through Windows Firewall”:

16

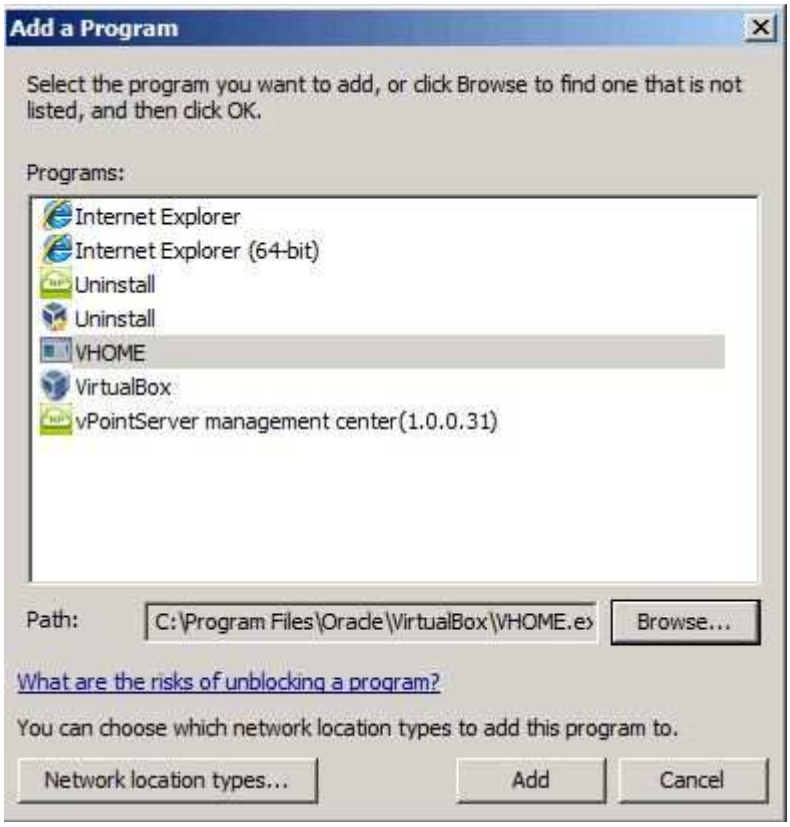
Click “Change settings”, then “Allow another program”



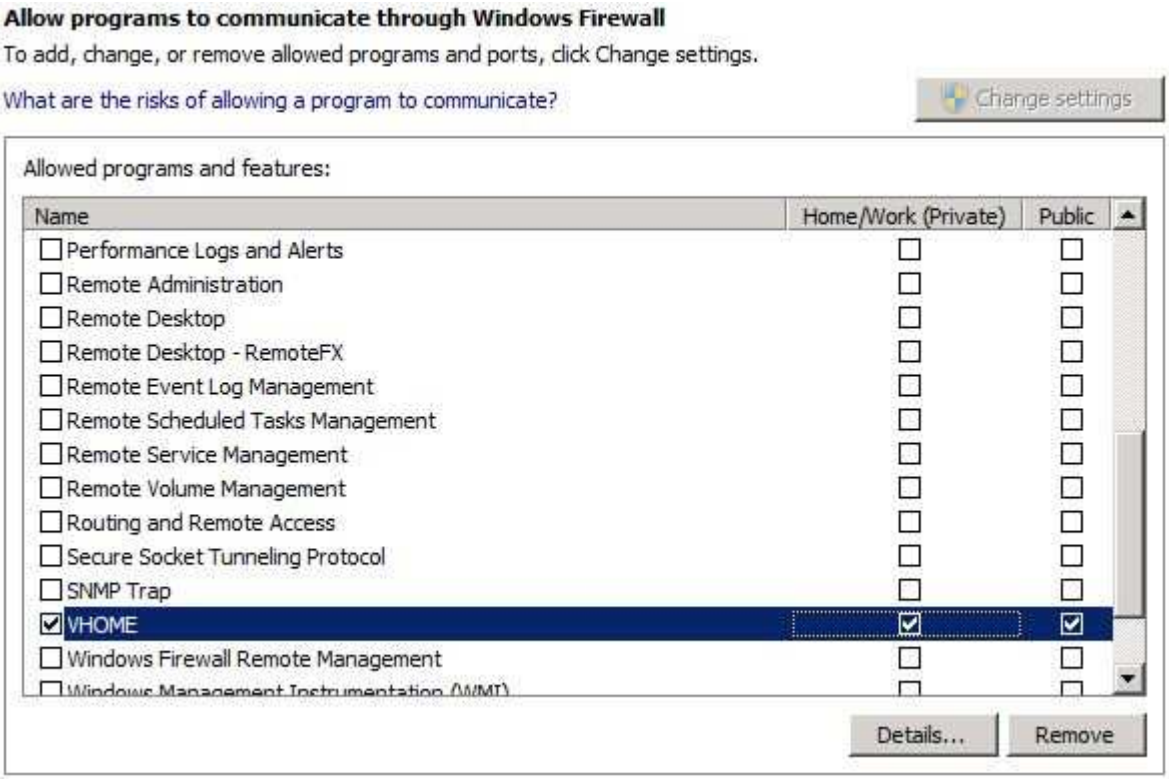
17

The program is VHOME.EXE in this locations:

C:\Program Files\Oracle\VirtualBox\VHOME.exe



18



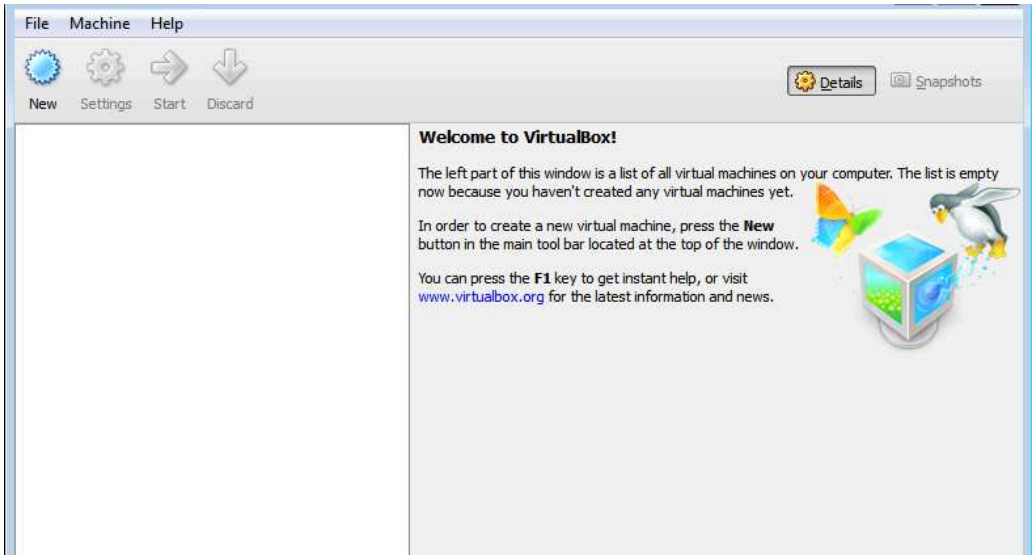
19

Please make sure you have selected both “Home/Work(Private)” and “Public”. See Picture 19.

3 How to create virtual machines

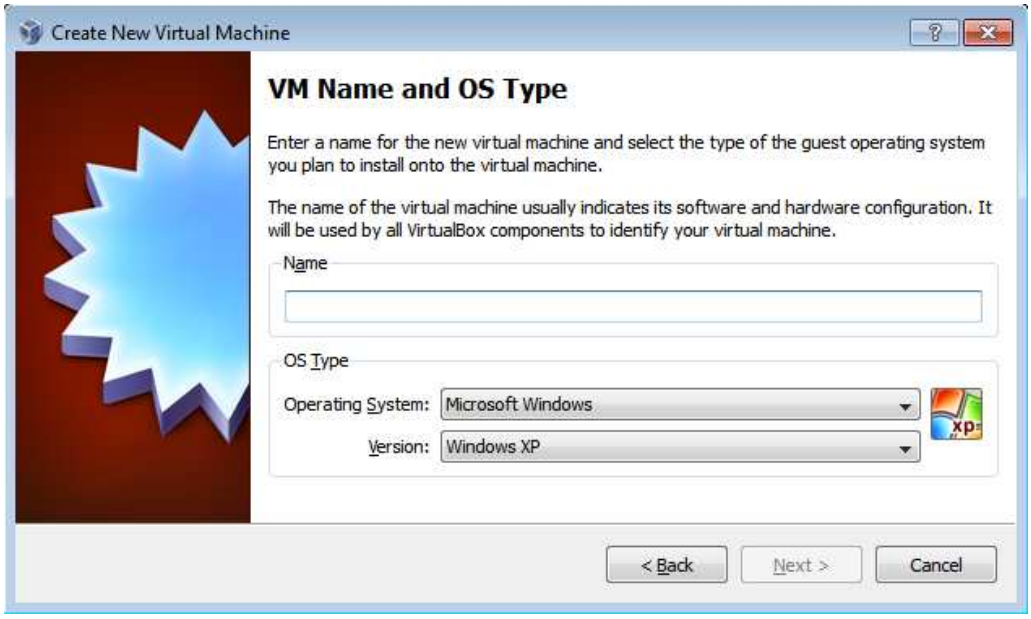
Now let's move on to next step: creating virtual machines. The operation system of virtual machines could be Windows, Linux, Mac, or actually any system supported by VirtualBox. You can choose the right one as you need. You can create multiple copies of same system on the Host PC (Server), say 5 copies of Windows XP intended for 5 users. Or you can also create virtual machines of different operation systems on the Host PC (server), say 1 copy of Windows XP, 1 Windows 7, 1 Ubuntu, etc.

Click the VirtualBox shortcut on desktop to open it. Then click "New" to start the guide. Picture 20:



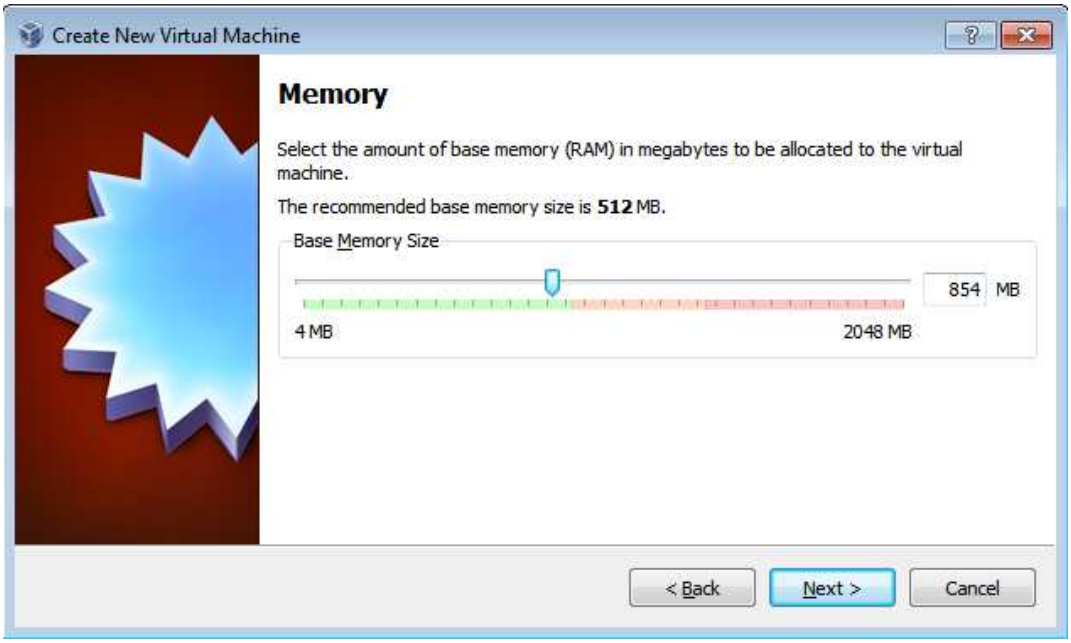
20

Name the virtual machine, and choose the right operation system. Picture 21:



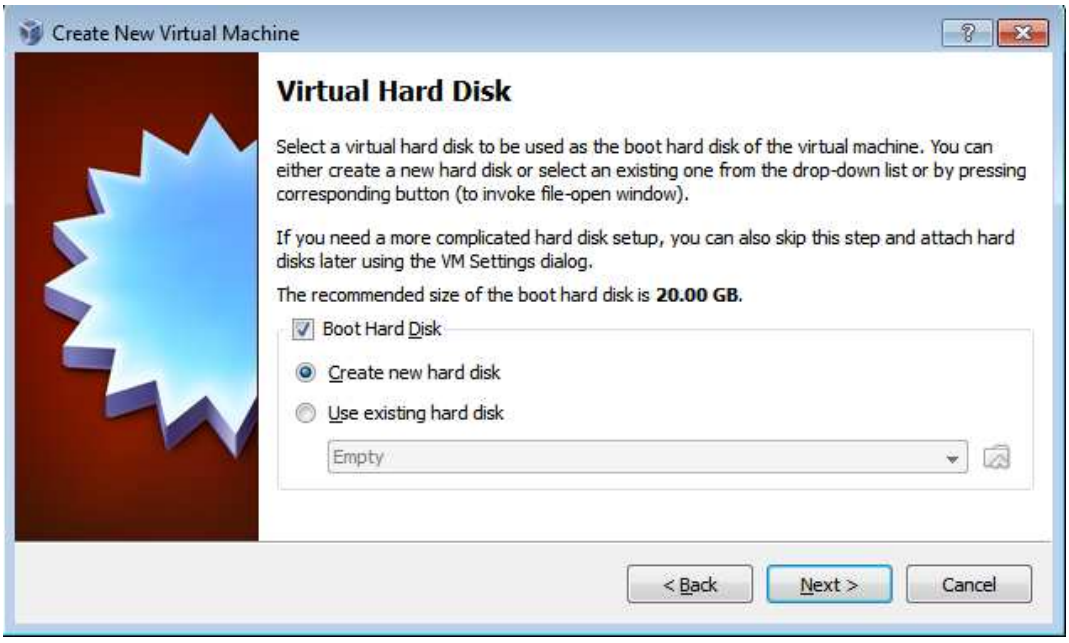
21

Set the size of virtual machine RAM. Picture 22：



22

Create hard disk for the virtual machine. When creating system drive, “Boot Hard Disk” option needs to be checked. Choose “Create new hard disk”, and then click “next”. Picture 23:

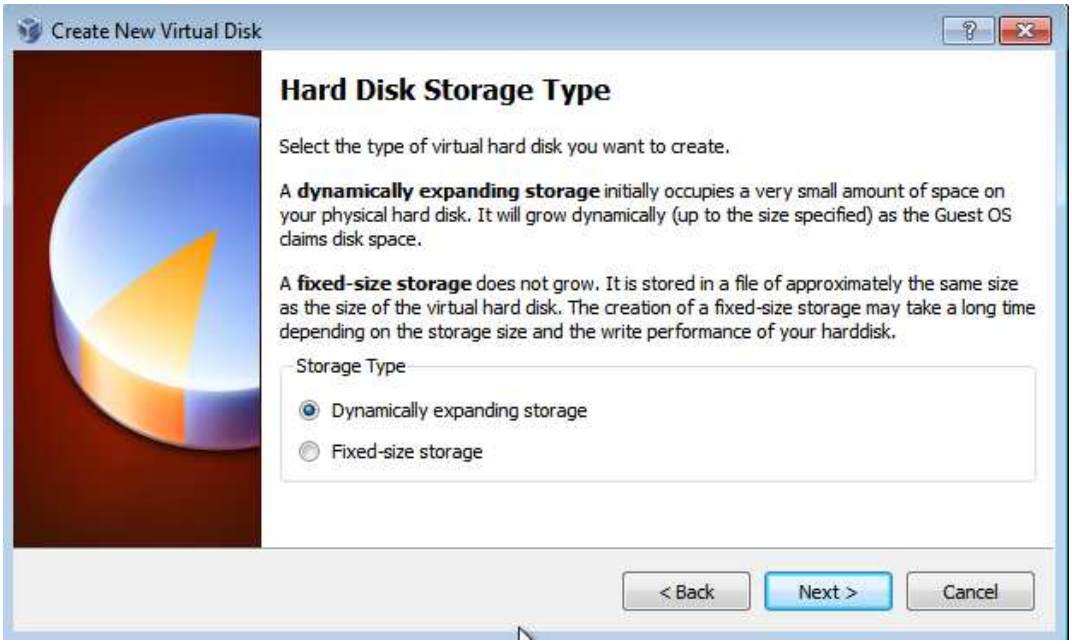


23

Click “Next” to continue. Picture 24：

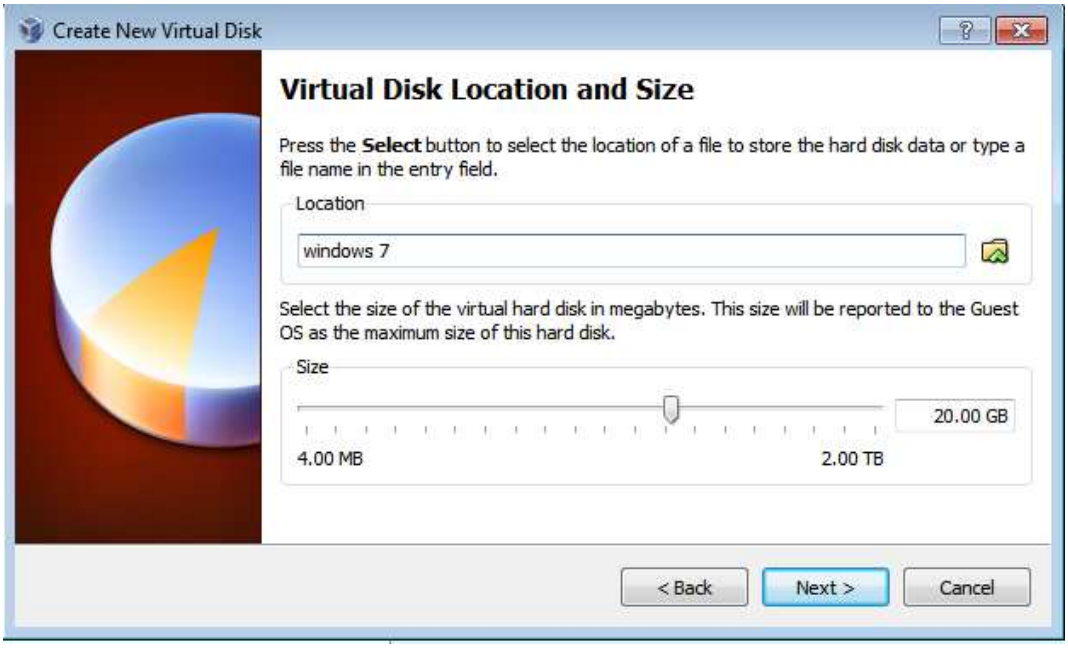
24

Choose Storage Type. Picture 25:



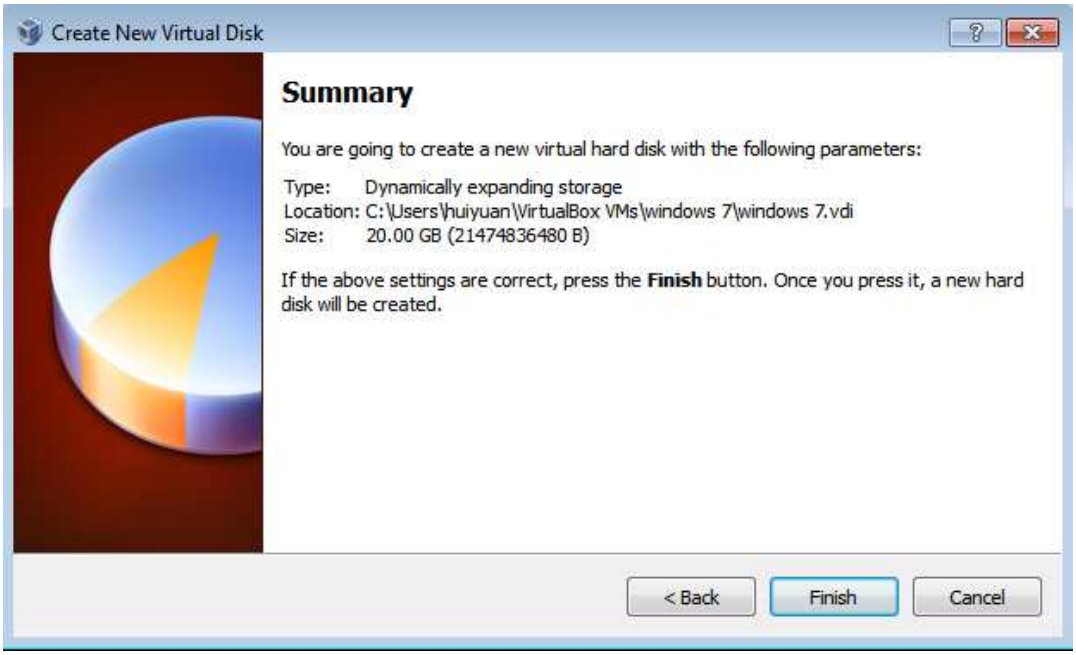
25

Set the size of hard disk. 5G or above is recommended. Picture 26：



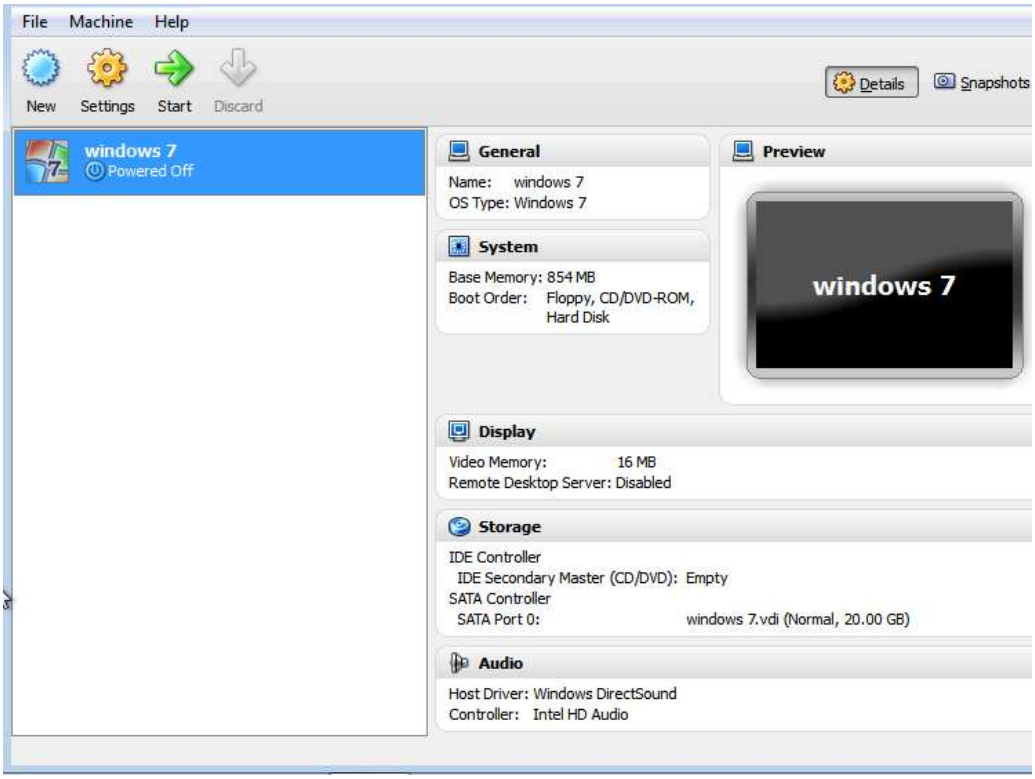
26

Check the Summary. Click “Finish”. Picture 27：



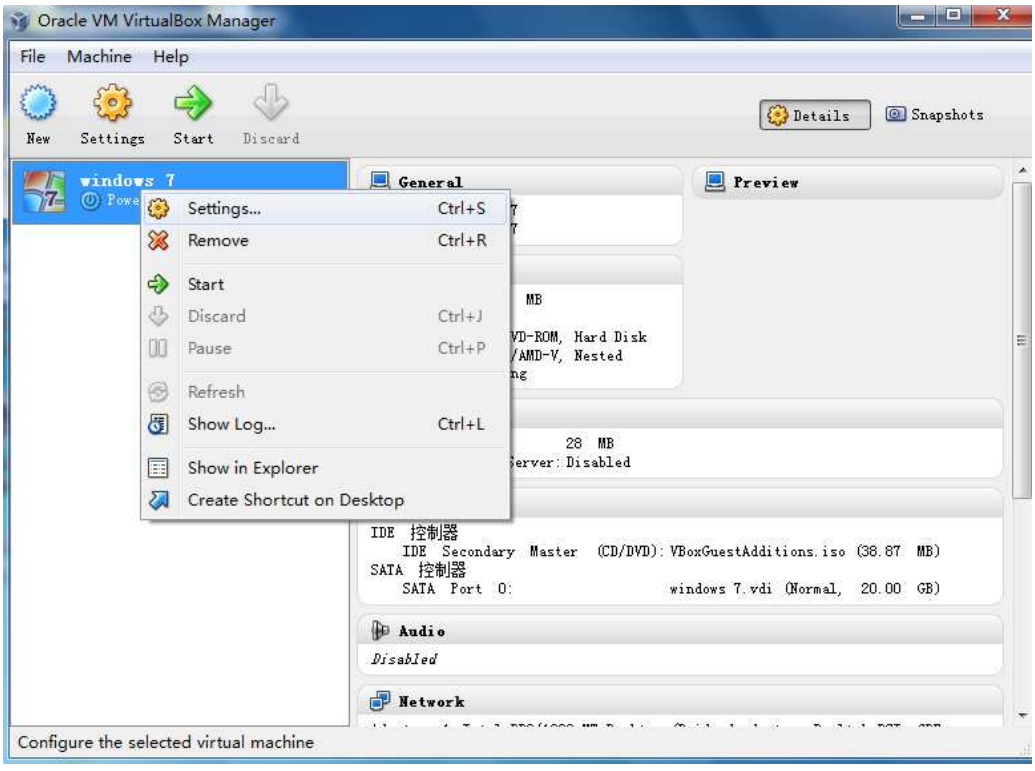
27

Now, we can see a virtual machine in the list. Picture 28：



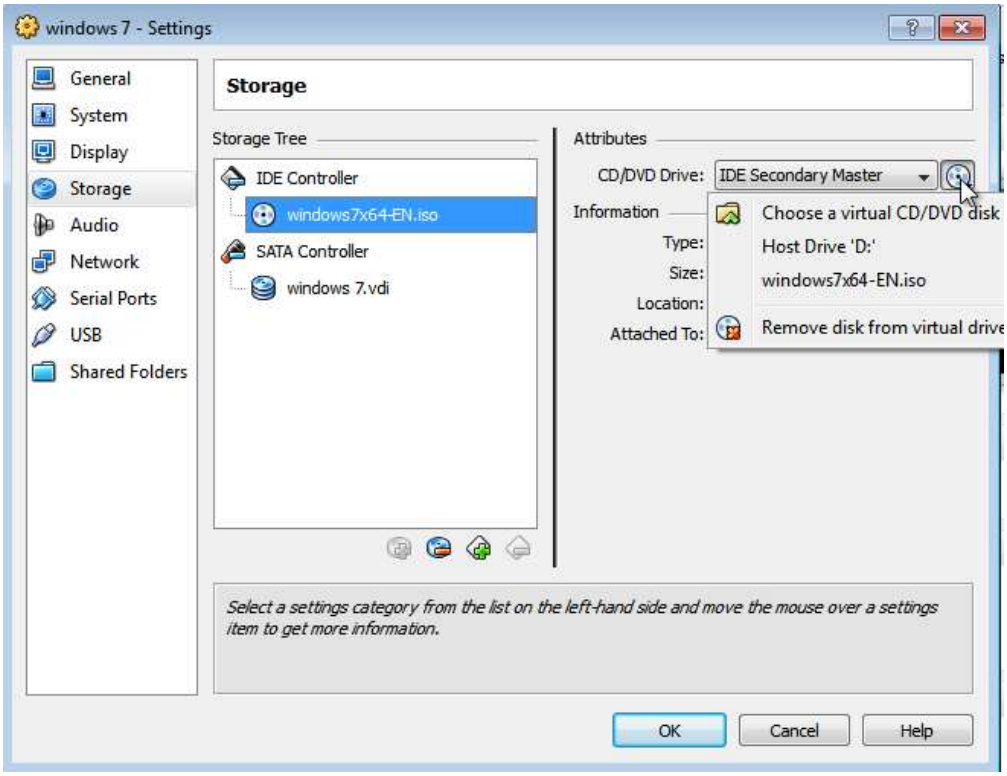
28

Now, we need to change settings of the virtual machine. Click "Settings", picture 29:



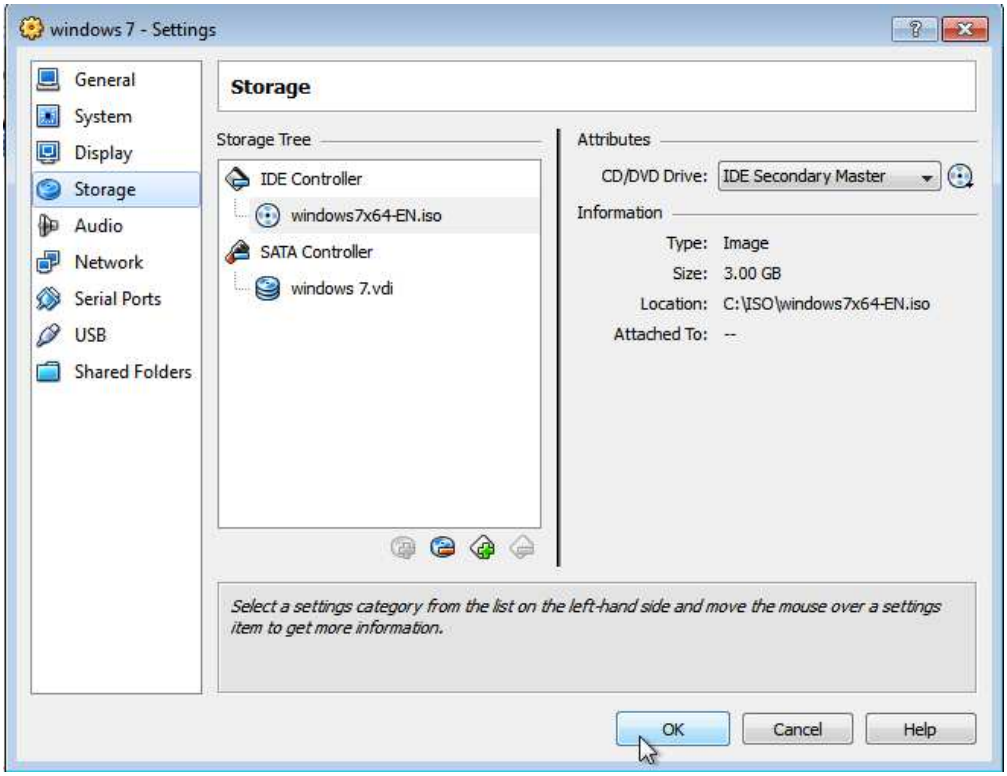
29

Click “Storage” on the left, and then click “CD drive” in the “Storage Tree”. In the “Attributes”, choose a system ISO image for installing the operation system. Picture 30：



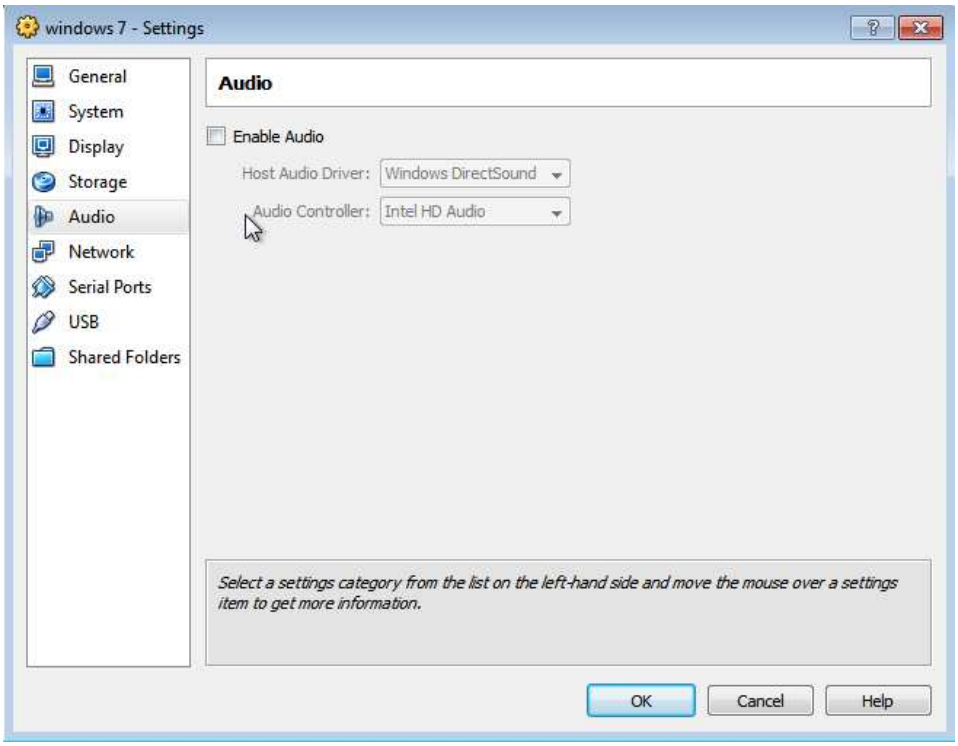
30

Click “OK”. You can see the ISO image is successfully loaded into to the CD drive. Picture 31：



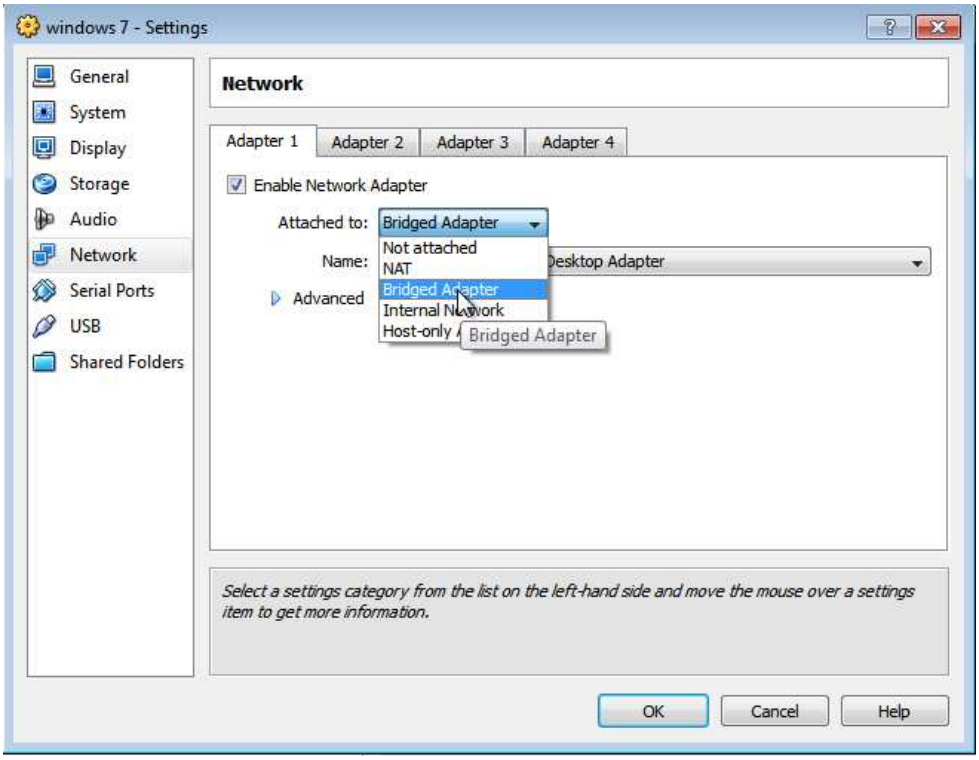
31

Next step, choose “Audio”，uncheck “Enable Audio”. We will install Diana its own audio device, so no need to enable audio device here. See picture 32：



32

Then go to “Network”, choose “Bridged Adapter” for the virtual machine. Picture 33：



33

And also in the "USB" option, check "Enable USB controller". Finally, click "OK" to finish. See picture 34：

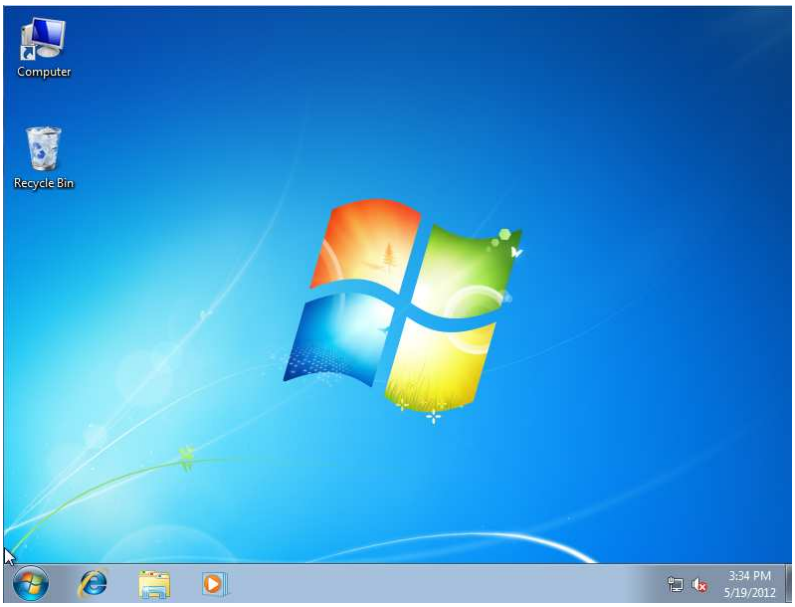
34

Note: Please also Enable USB 2.0 controller in order to make the VM support USB2.0 devices.

Now, we can start the virtual machine and begin the installation of operation system. The installation process is just the same as you were installing it on physical PC (Server).

2.2 Install Guest Additions:

Guest Additions need to be installed to the virtual machine to function higher performance. Start the virtual machine we have just finished installing operation system. See picture 35：



35

Click “Devices”, and then choose “Install Guest Additions”. See picture 37：

37

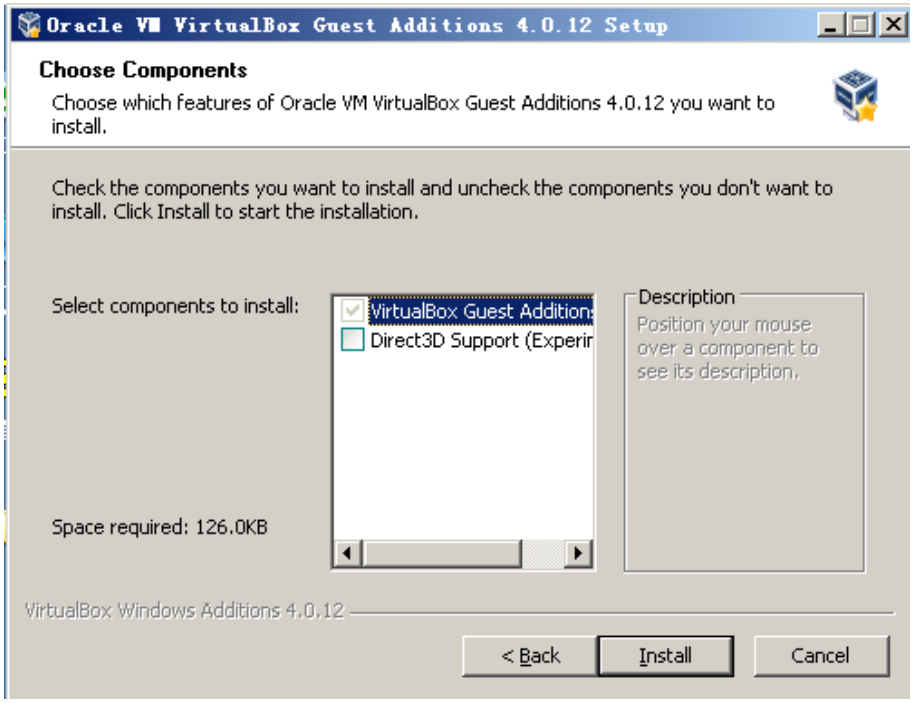
Click “Run VBoxWindowsAdditions.exe” in the popup window. See picture 38：

38

Click “Next”. Picture 39：

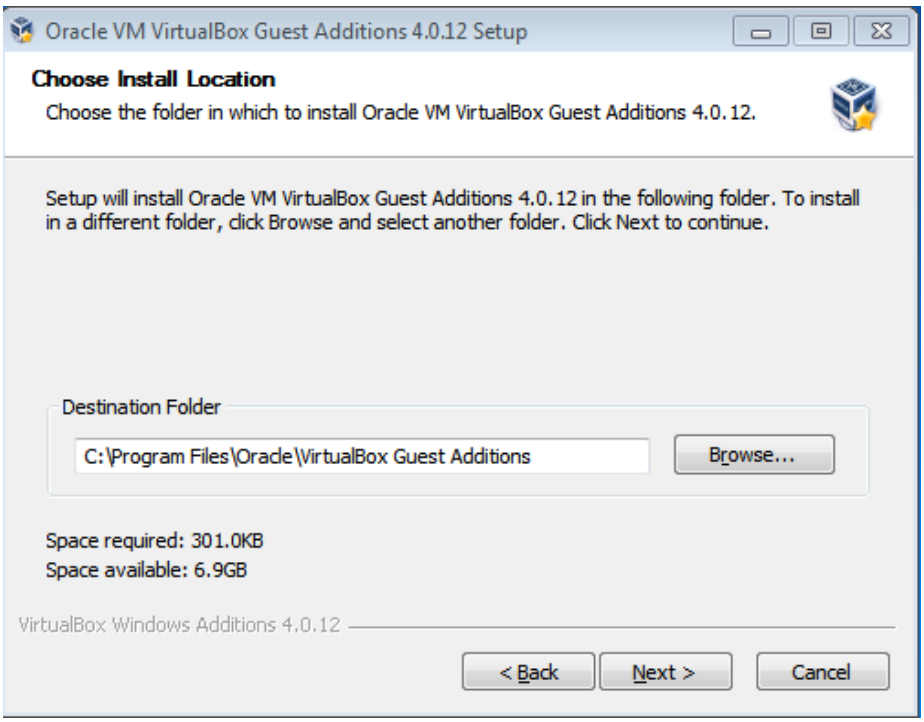
39

Do not check “Direct3D Support”. Picture 40



40

Choose an install location. Default is OK. Picture 41：



41

When the installation complete, click “Finish” to reboot the virtual machine. Picture 42：

图

42

3.3 Install vPointGuest to Virtual Machines

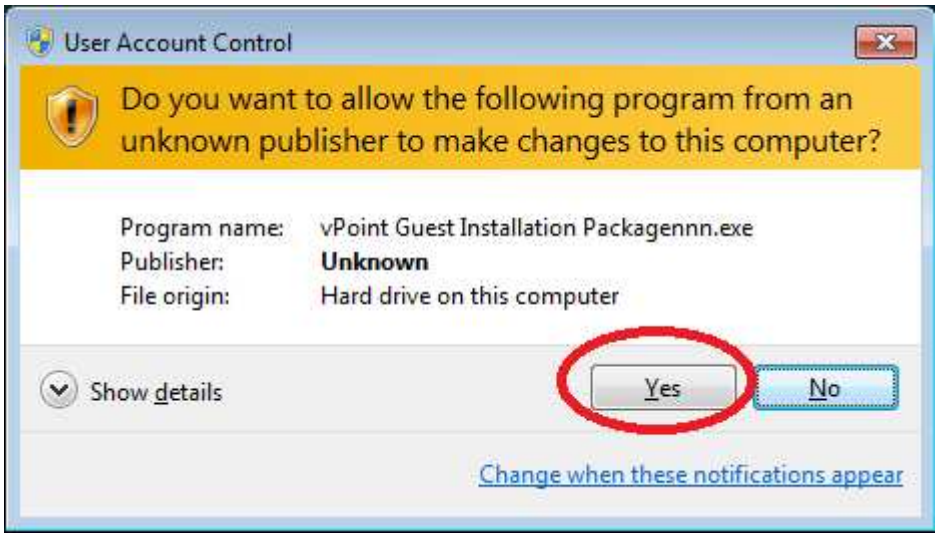
Now, we will install vPointGuest to the virtual machine. The file is called vPointGuestInstallationPackage.

Start the virtual machine and log into the system. Double click on "vPointGuestInstallationPackage15.exe" (15 is the version number. Please always install the latest version) to run the installation. (You can get the installation file from vPoint CD or download from our website. Here is the link: http://www.sundenc.com/support/download/d1/).

See picture 43：

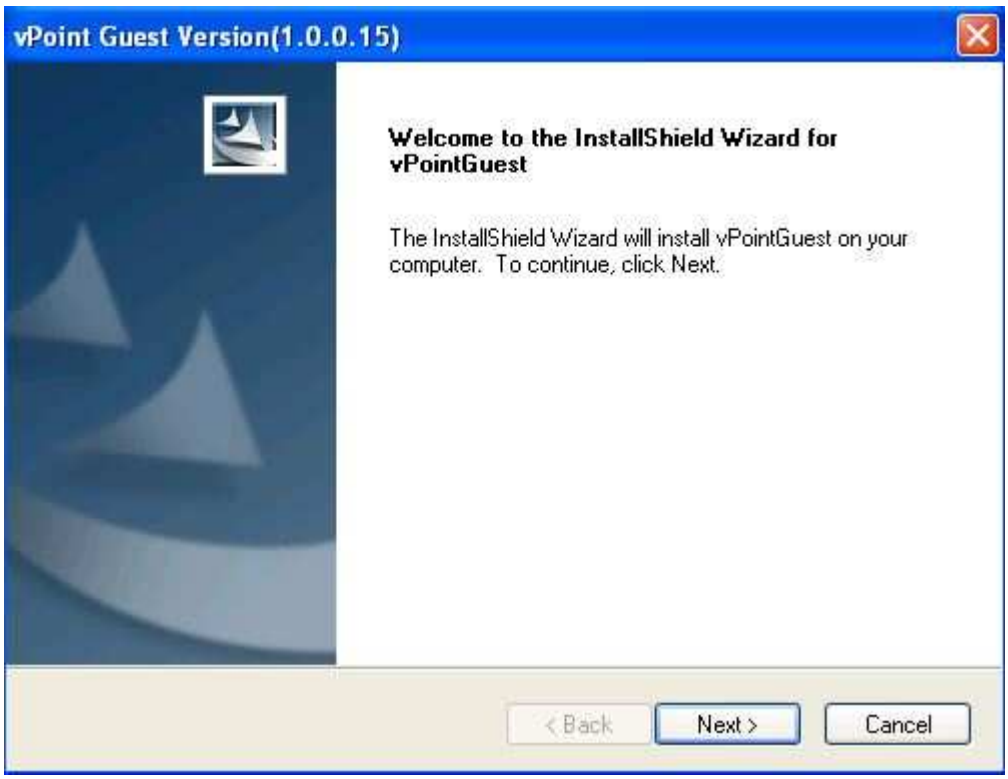
43

Click on "Yes" to continue if this window pops up:



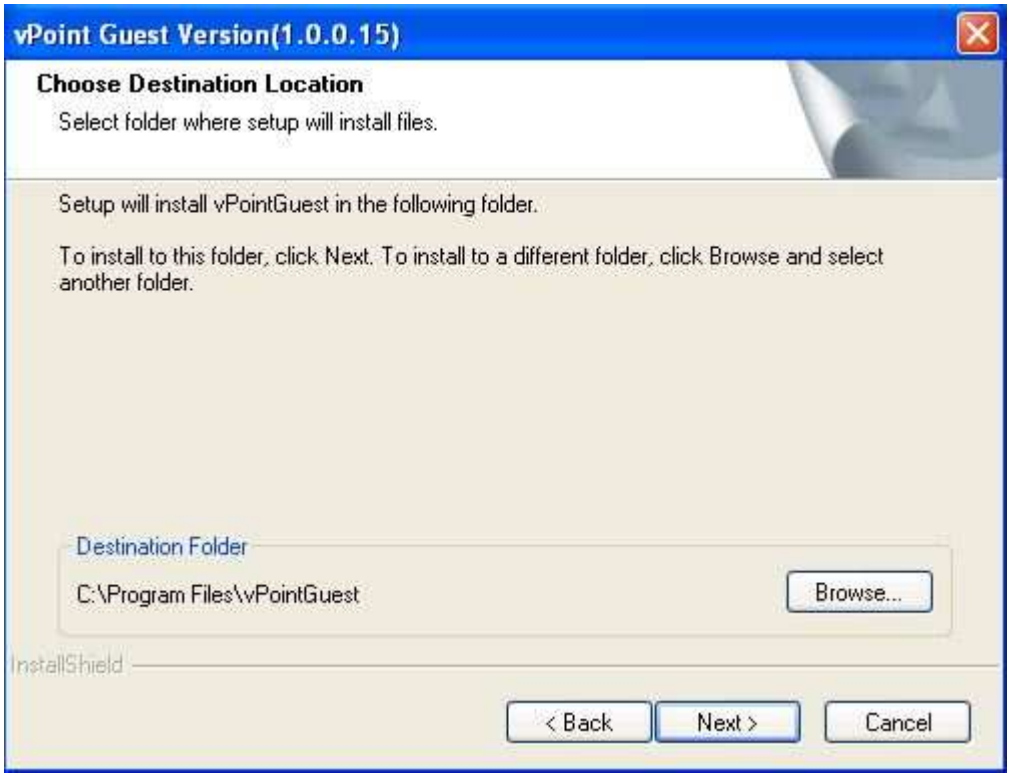
44

Click on “Next”:



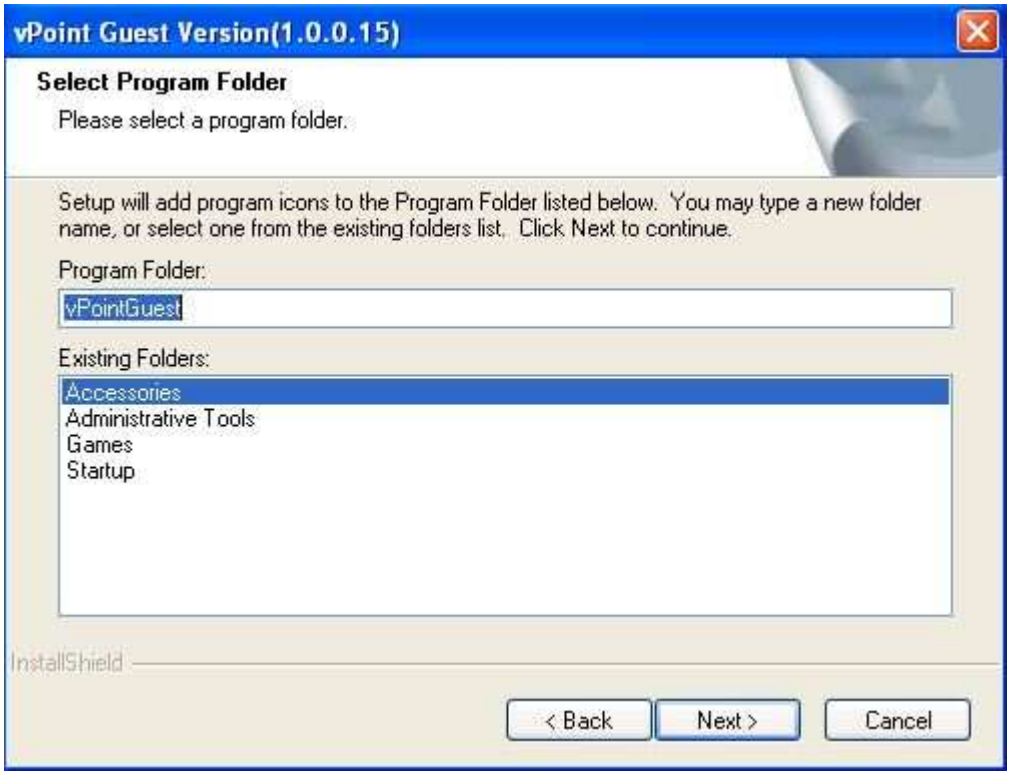
45

Choose Destination Folder. You can use default settings:



46

Click on “Next” to continue:

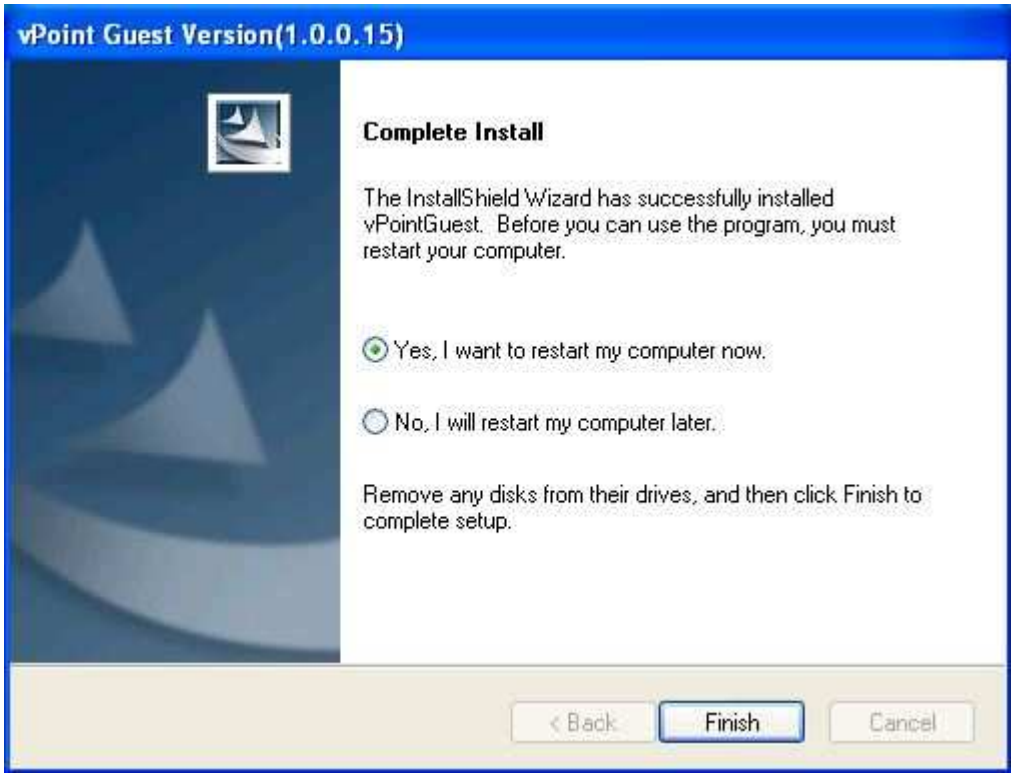


47

Click “Continue Anyway” if this window pops up:

48

Click “Finish” to restart the VM:



49

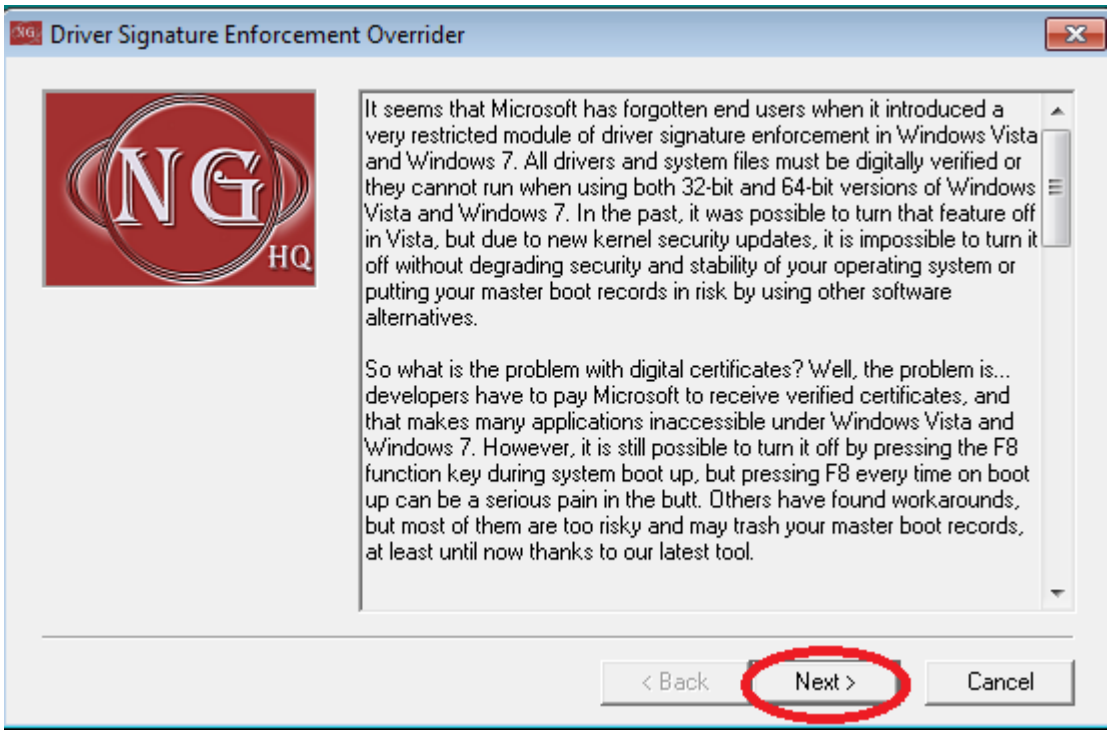
The above steps are for 32bit Windows operation system. If the VM uses a 64bit version Windows OS, there are some more steps as shown below (Picture 50 to Picture 61):

After choosing the destination folder and continuing with the installation, you will see this:

50 (64bit OS)

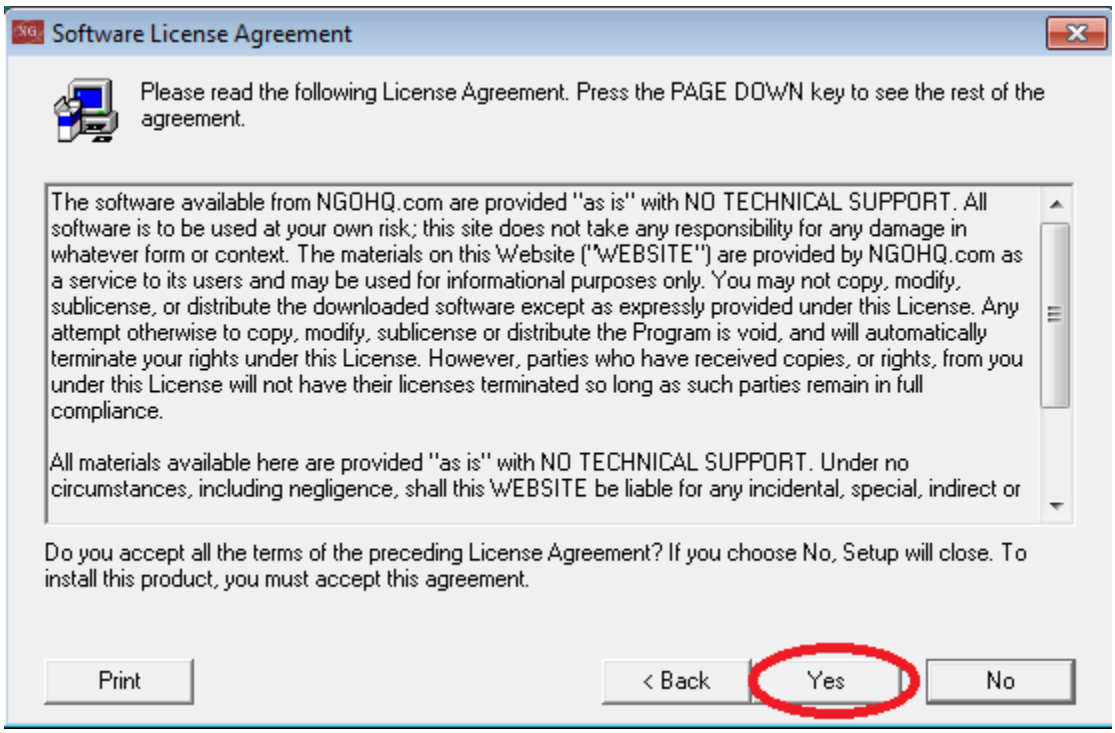
Click on the RED “NG” label to enlarge the window.

Click on “Next” to continue:



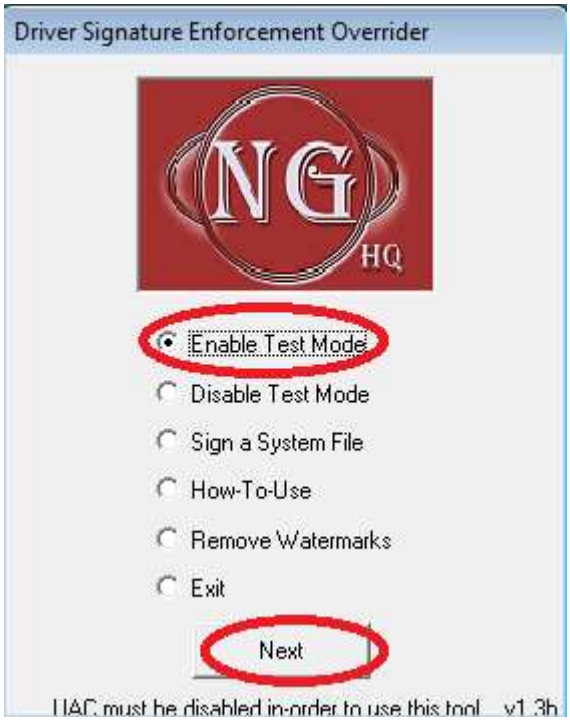
51(64bit OS)

Click “Yes”:



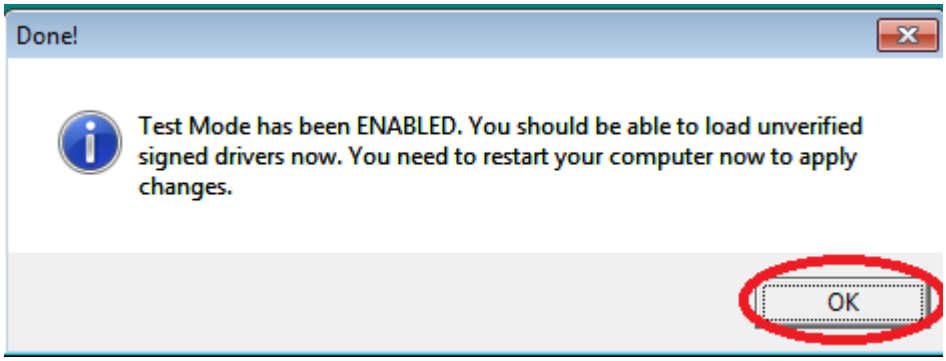
52 (64bit OS)

Choose “Enable Test Mode”, then click on “Next”:



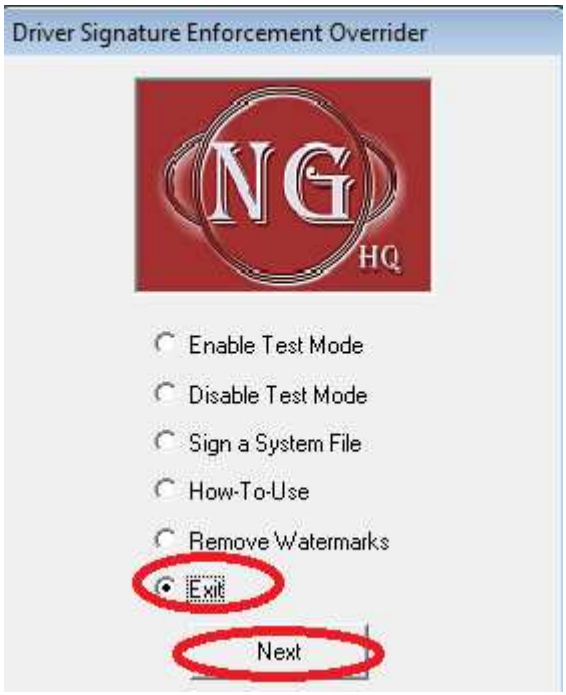
53 (64bit OS)

Click on “OK”:



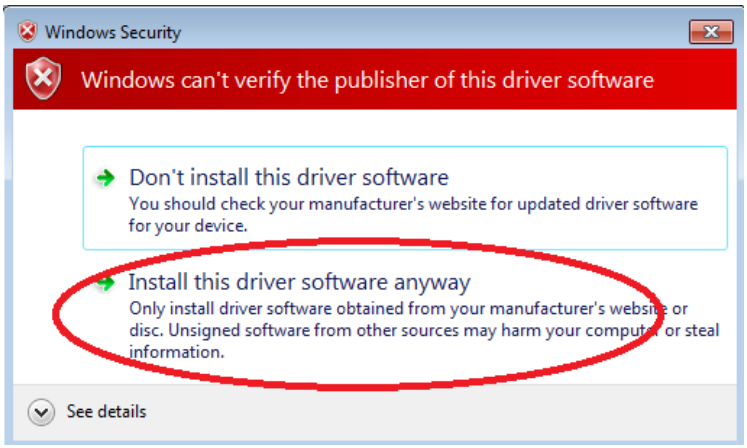
54 (64bit OS)

This time, choose “Exit”, then click on “Next”:



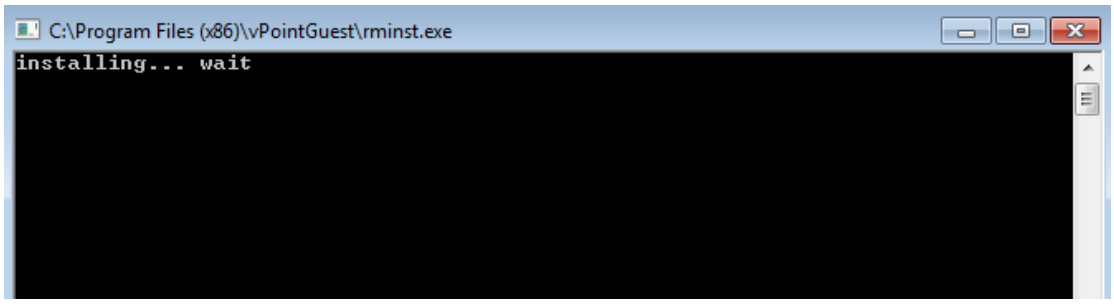
55 (64bit OS)

When this security warning pops up, choose “Install this driver software anyway”:



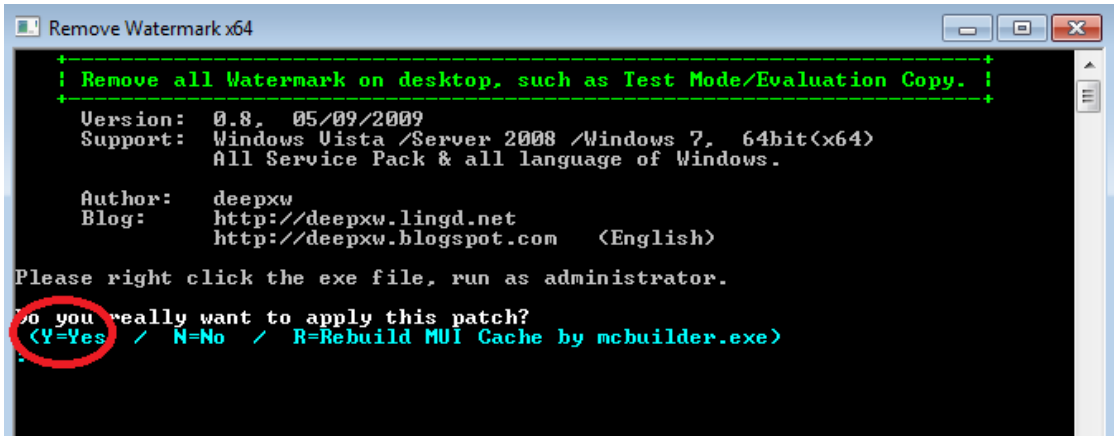
56 (64bit OS)

Installing:



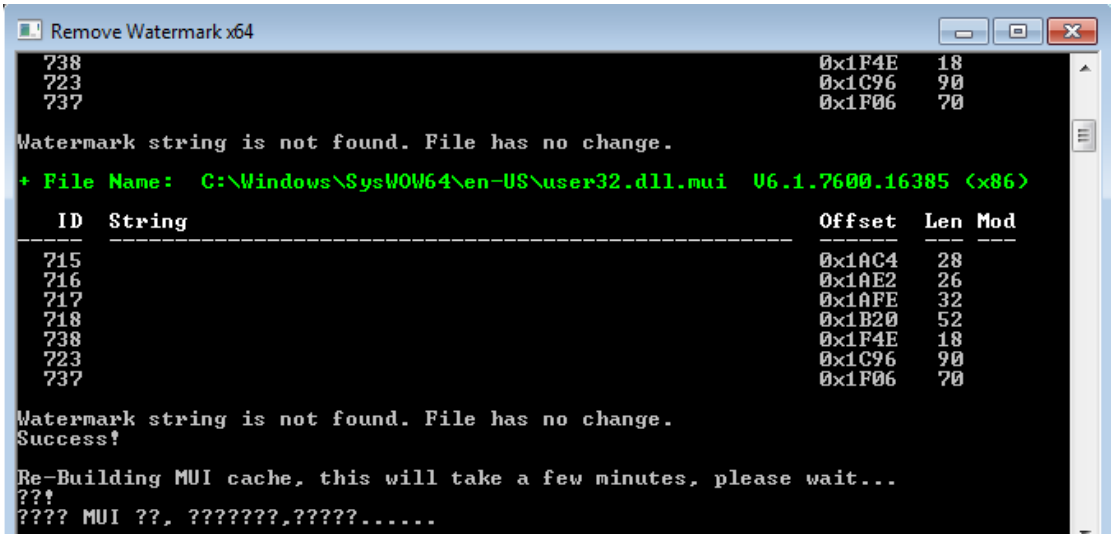
57 (64bit OS)

Type “Y” to apply the patch:



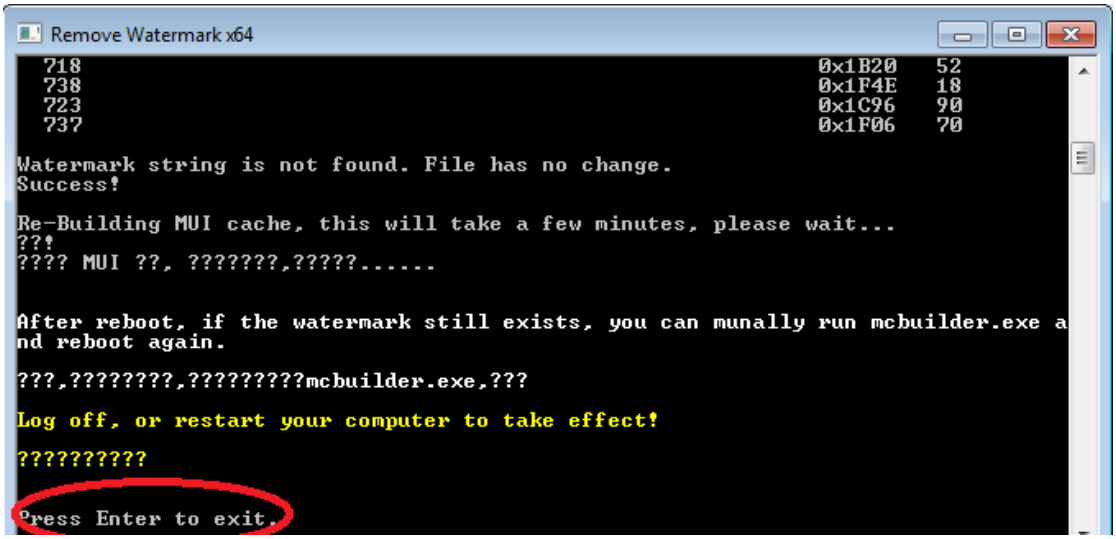
58 (64bit OS)

Installing, please wait:



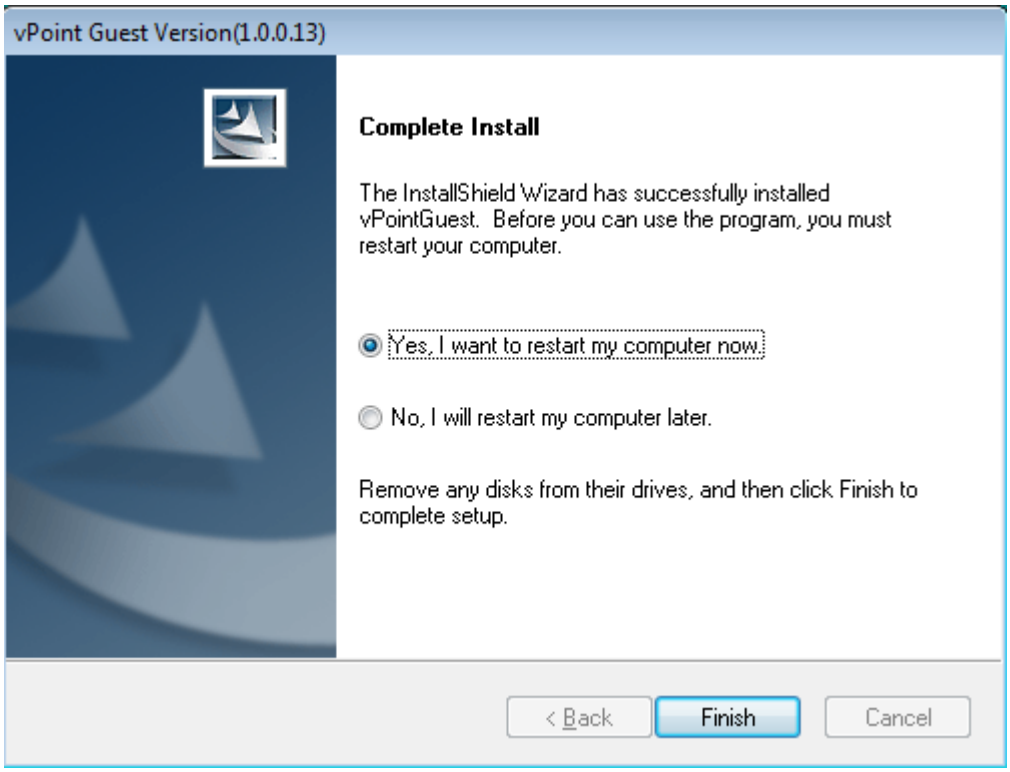
59 (64bit OS)

Press ENTER to exit:



60 (64bit OS)

When installation completes, restart the VM.

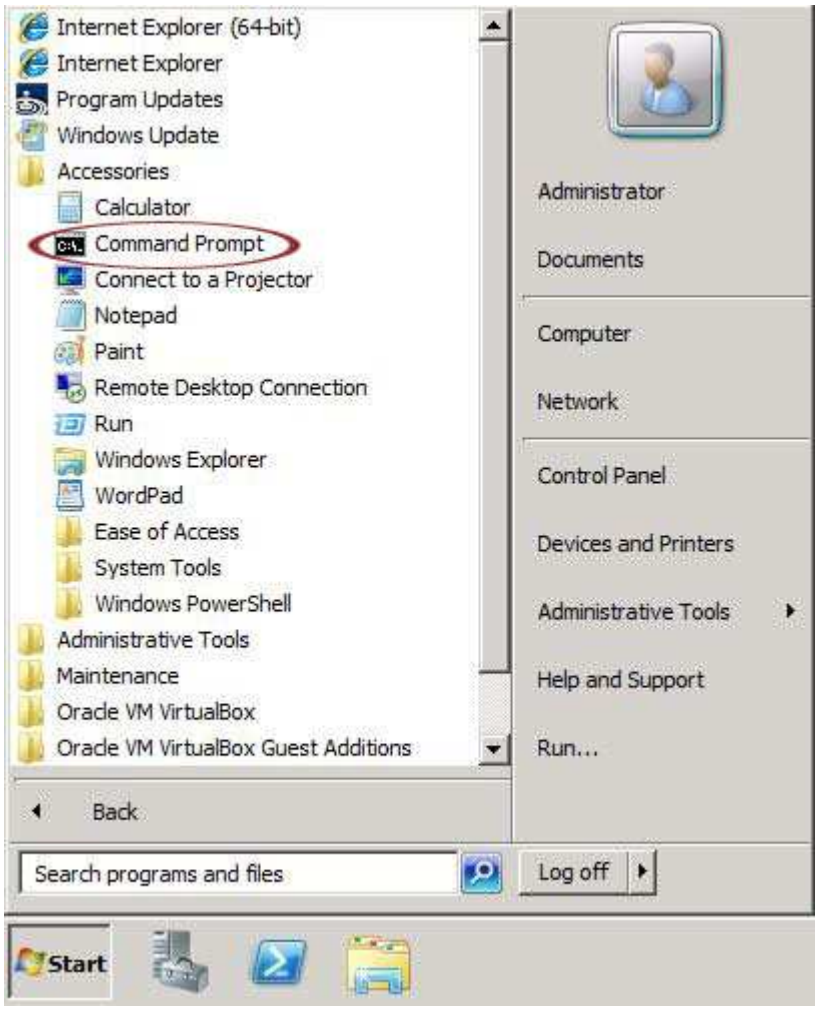


61 (64bit OS)

3.4 The Clone of Virtual Machines

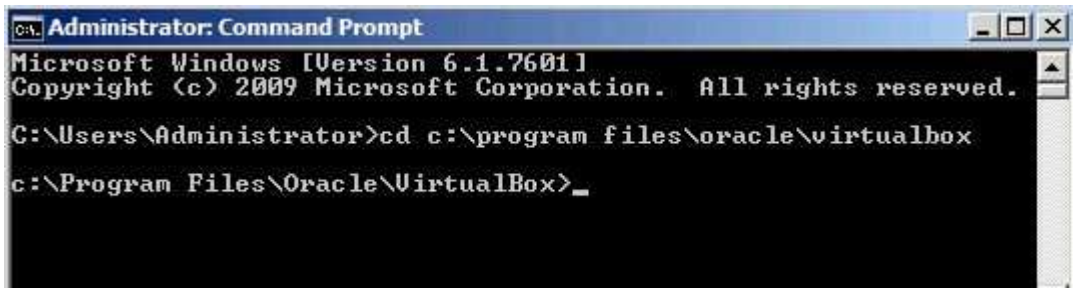
More often, we will be using more than 1 copy of same Operation System, say windows 2003, on the Host PC (server). One quick way to have multiple copies of Windows 2003 is to clone it. When you have finished installing Windows 2003 and necessary configuration, we can move on to clone it.

Click "start" > "All Programs" > "Accessories", then right click "Command Prompt", choose "Run as Administrator". See picture 62:



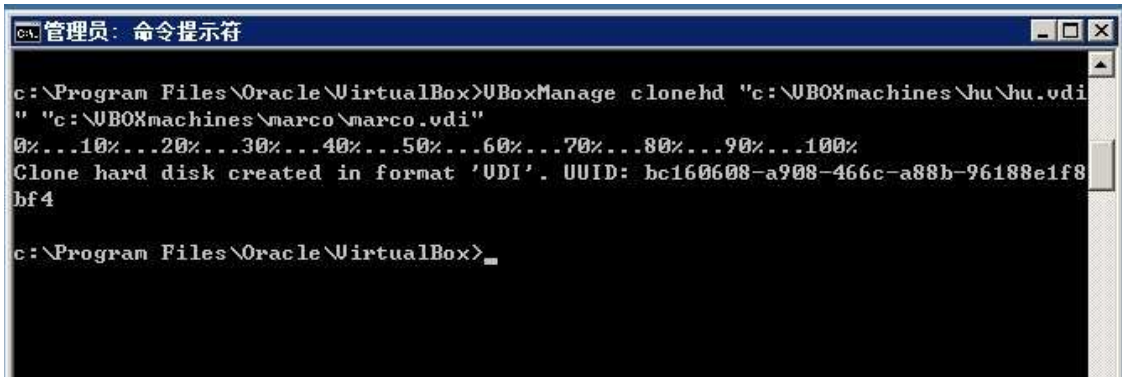
62

Run "CD C:\Program Files\Oracle\VirtualBox", Picture 63:



63

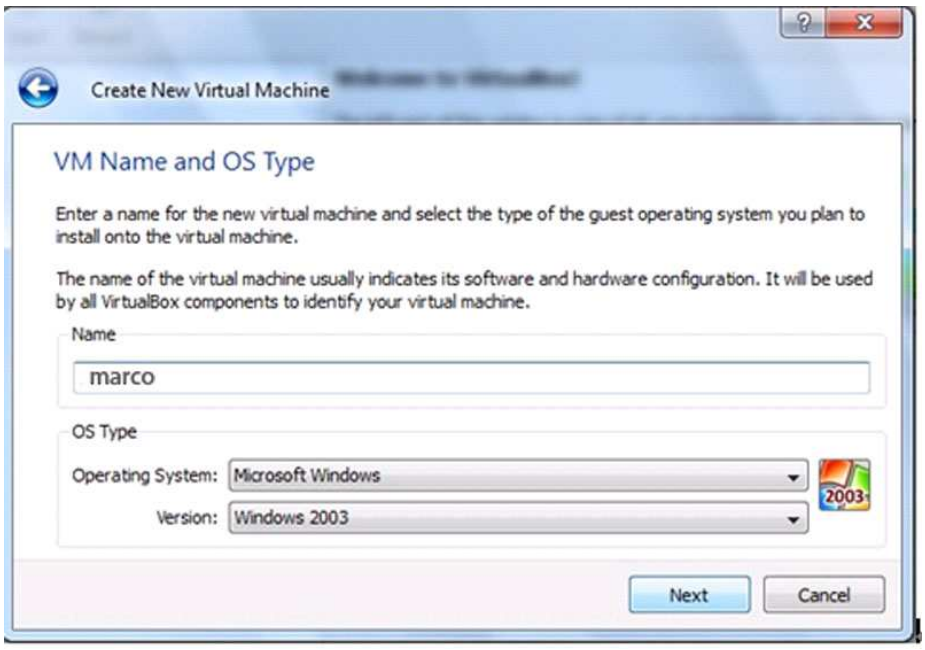
Run “VBoxManage clonehd” to do the clone work. Here is the format: VBoxManage clonedhd “path and name of source file” “name and destination of target file”. We assume the virtual disk file of Windows 2003 is in this location: “C:\VBOXmachines\hu\hu.vdi”, and “hu.vdi” is the file name. Destination is “C:\VBOXmachines\marco\marco.vdi”. Here is the full command: VBoxManage clonehd “C:\ VBOXmachines\hu\hu.vdi” “C:\VBOXmachines\marco\marco.vdi”。See Picture 64：



64

Note: if you have chosen to use default when installing VirtualBox, you can find the virtual disk files of virtual machines at this location: C:\Documents and Settings\Administrator\VirtualBox VMs\.

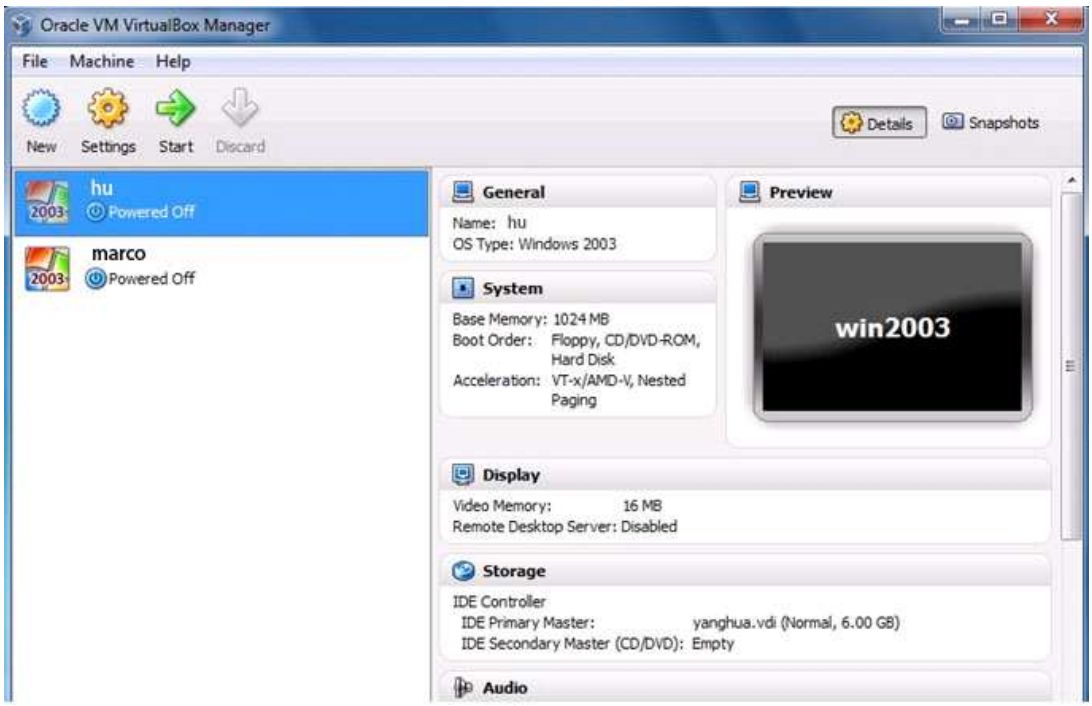
When the clone is done, we need go back to “Oracle VM VirtualBox Manager”. Click “New”, type name “marco” (or nay name you want) for this machine, and then choose “windows 2003”. See picture 65:



65

Choose "Use existing hard disk", open the archive and find the location of the virtual disk we have just cloned. Then click "OK" to save. Virtual machine with name "marco" will appear in the list. See picture 66 and 67:

66



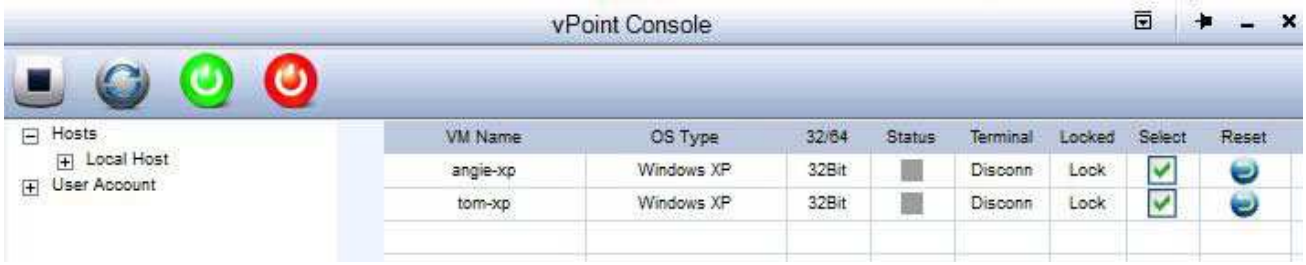
67

Now we have finished the clone of virtual machine.

4. The vPoint Console & Setting Up of Accounts

vPoint Console is the VM and User Account management center for Diana. We can use it to set up user accounts and assign virtual machines to the users.

Double click "vPoint Console icon" to open it. See picture 68：

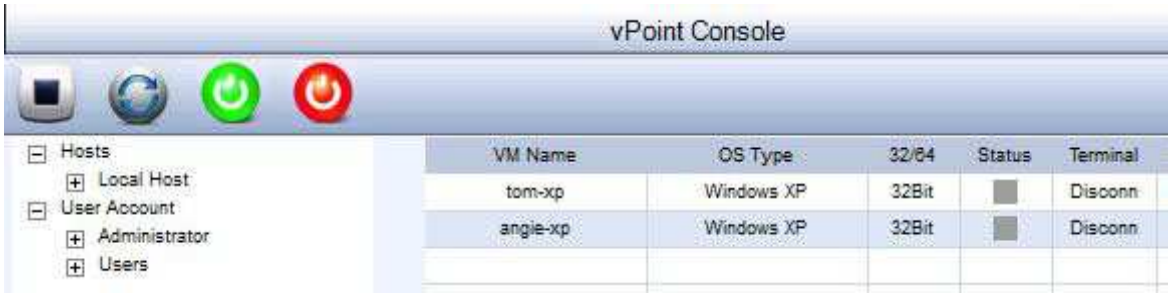


68

Legends and functions of vPoint Console:

	Button for stopping vPoint: when vPoint is running, click on this button will stop the running of vPoint; when vPoint is stopped, this button will be a "start" button (a triangle), and click on it will start vPoint.
	VM refresh button: if a new VM is created while vPoint is in running status, we can use this refresh button to include this new VM to the control of vPoint, thus it can be assigned to Diana users.
	VM power on button: if VMs need to be powered on before Diana users logging in, we can selected those VMs (the Select column) and then click on this power on button.
	VM power off button: use this button to power off selected VMs.
VM name	This column shows the name of VM
OS Type	This column shows the type of VM operation system
32/64	This column shows the version of VM operation system, 32bit or 64bit
Status	This column show the status of VM: a grey square stands for Power Off, while a green dot is for Power On.
Terminal	This column shows whether this VM is connected by a Diana terminal or not.
Locked	This column shows whether this VM is in the control of vPoint ornot. When the status is "Lock", we can click on it to unlock the VM from vPoint control. After that, the VM is back to the control of VirtualBox Manager, thus we can use VirtualBox Manager to make changes to the settings of VM or other maintenance work. When it is done, we can click this column again to lock this VM to vPoint so that it can be available to Diana users.
Select	The column is used to make selection of VMs. Selected VMs can be powered off or powered on (depending on their current status) by click on the VM Power On button or VM Power Off button.
Reset	When a VM is crashed (blue screen, freezing, etc), we can click on Reset button to power off it.

“Local Host”: click on it will show the list of all VMs hosted on this server. In picture 69, we can see two VMs there. One is “tom-xp”, the other is “angie-xp”:



69

“User Account”: there are two types of User Accounts. One is “Administrator”, while the other is “Users”. Administrator by default has access to all VMs. “Users” have only access rights to the VM(s) assigned to him. Right click on “Administrator”. In the pop-up, choose “New Administrator”:

70

A new user unnamed will show in the list:

71

Click on the name to change name. In this example, we change it to “sunde”, type in password, and then click on “OK” to save:

72

“Users” are common Diana users who only have access rights to those VMs that have already assigned to them. The steps to create User are the same as those of creating “administrator” users.

When a User is created, choose the VM to be assigned to him in “Machine(s) denied to be accessed” list, and then click on the  key to move it to the “Machine(s) allowed to be accessed” list.

Normally, we only need to assign only one VM to one Diana user. Of cause, you can also assign multiple VMs to a certain Diana user.

5. Setting Up of Diana Terminal

Please make sure that you have connected monitor, keyboard, mouse, and Ethernet cable to Diana Terminal before you power on Diana. “Server List” will show up when Diana is powered on and initialized. See picture 73:

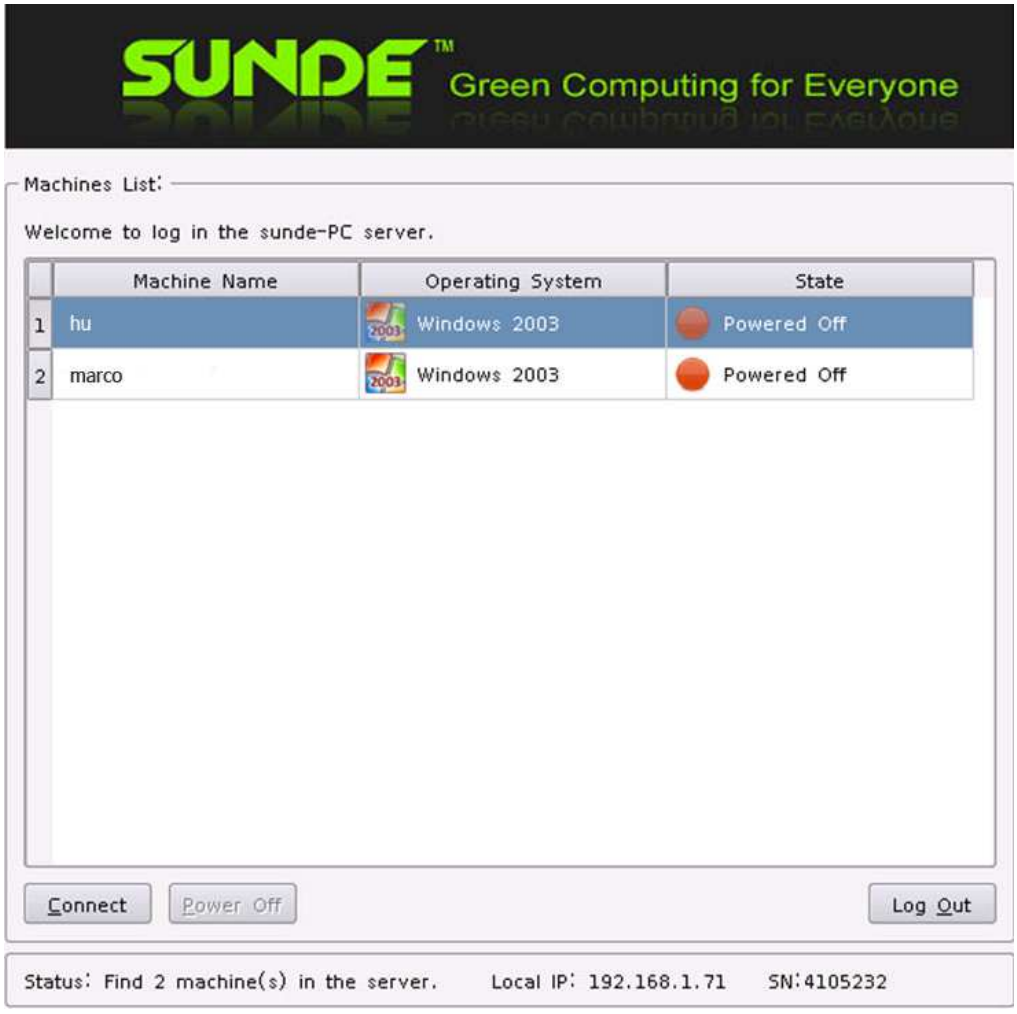
73

Server with name “sunde-PC” as shown in the list is the Host PC (Server) on which we have installed DianaServer. Choose it and click “Log In”.

Enter “User Name” and “Password” and then press “Confirm”. See picture 74:

74

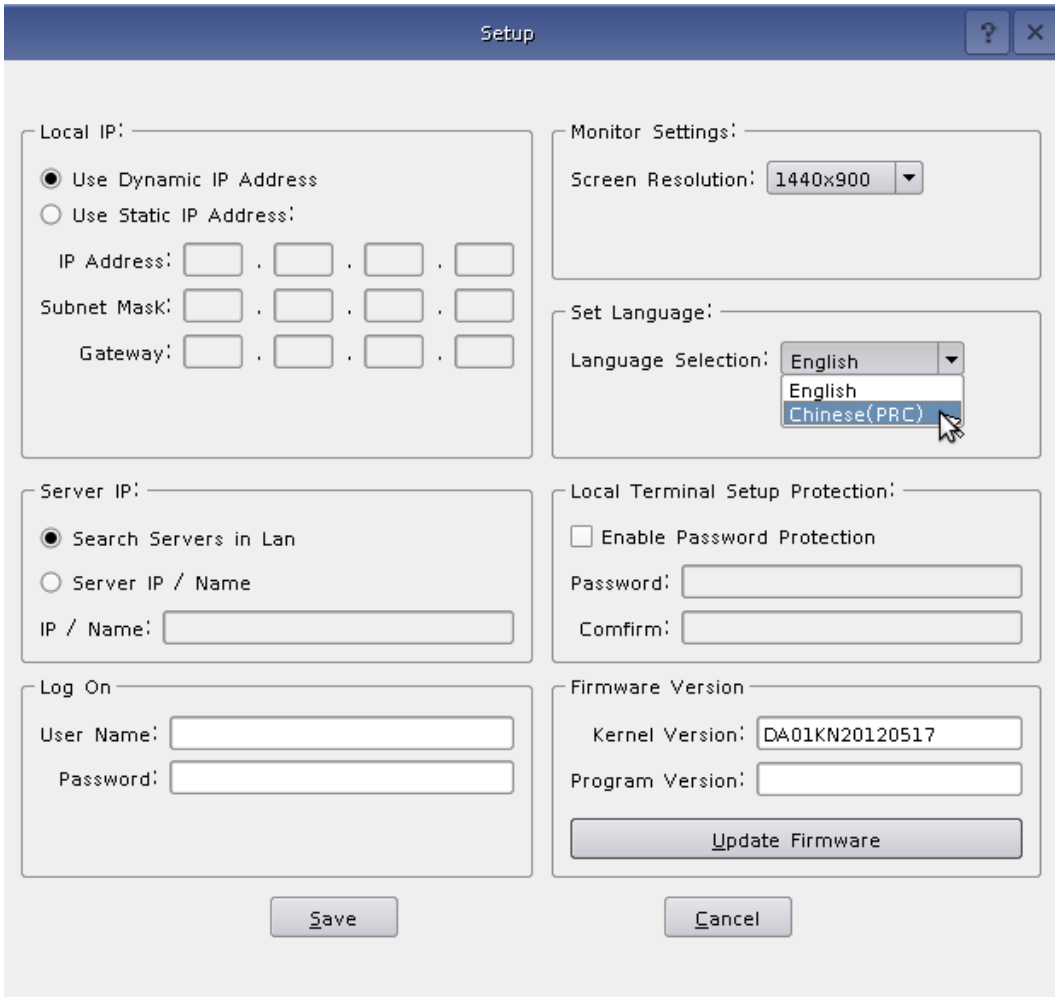
The coming up new window show all the virtual machines which have been assign to user “sunde”. Picture 75:



75

Choose one virtual machine from the list and then click “Connect”. You will now be connected to this virtual machine. If its original status is “Power Off”, a “Connect” click will automatically start the virtual machine.

Picture below shows the "Setup" page of Diana. You can press "Setup" button as shown in Picture 53 to come to this page.



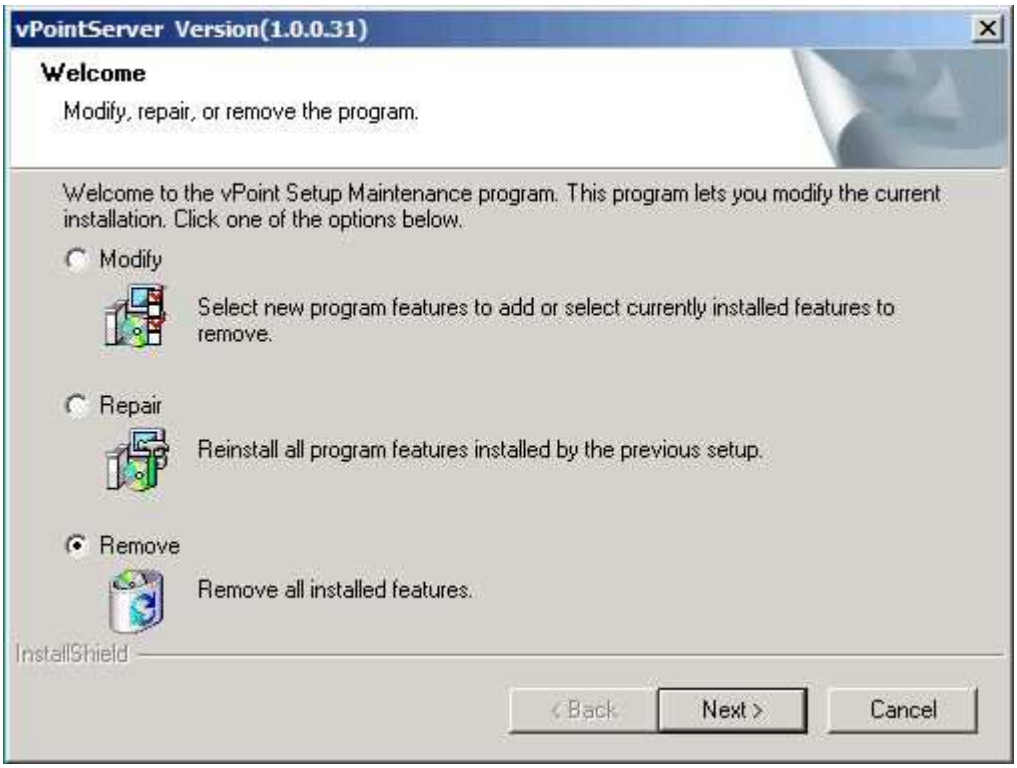
76

Here users can set up the way Diana getting its IP address, screen resolution, language, Server IP, etc.

6 How to uninstall vPoint 1.0.0.31

There are two ways to uninstall vPoint. One is to run vPoint Installation Package and when the following window pops up, choose “Remove” to uninstall vPoint. The other way is to go to “Control Panel”, and then “Programs”. From the program list, find “vPoint” and click on it.

When it starts, choose “Remove”, and then click “Next”. Picture 77:



77

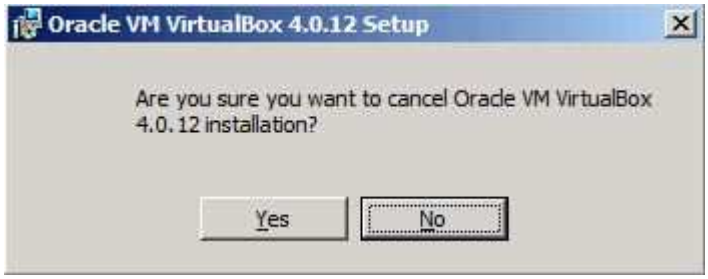
Click “OK” to confirm un-installation.

78

Uninstalling process will begin. VirtualBox will also be removed (if you want to reinstall vPoint later, you can keep VirtualBox. No need to uninstall it). Click "Next" to continue. Picture 79:

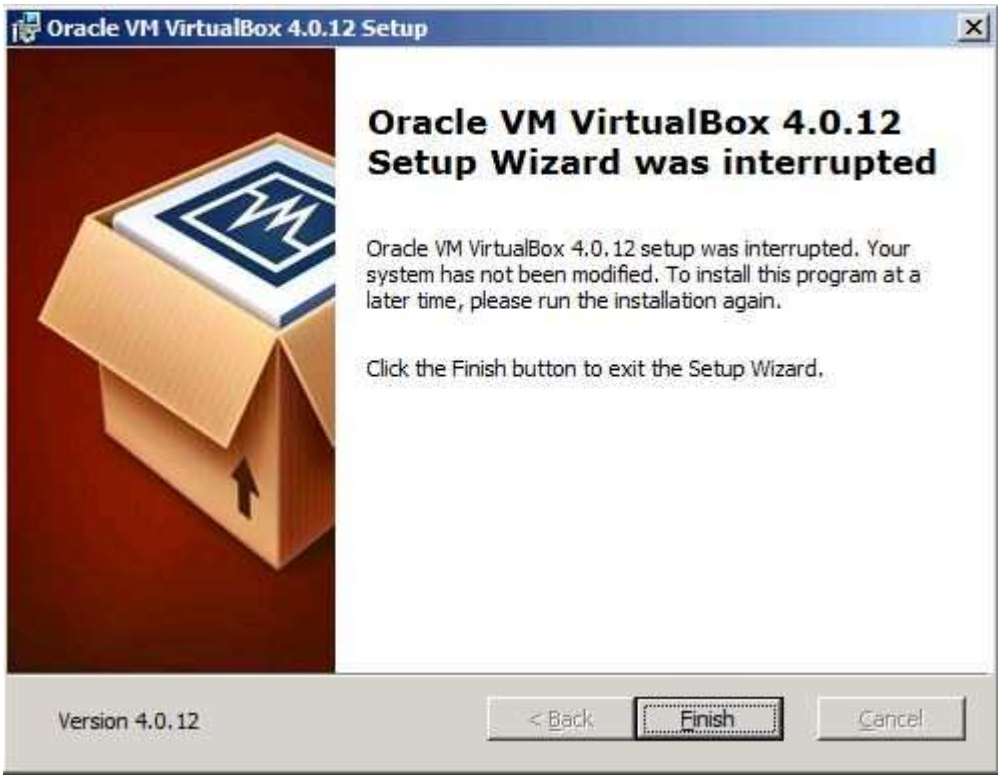
79

Choose "yes" to continue.



80

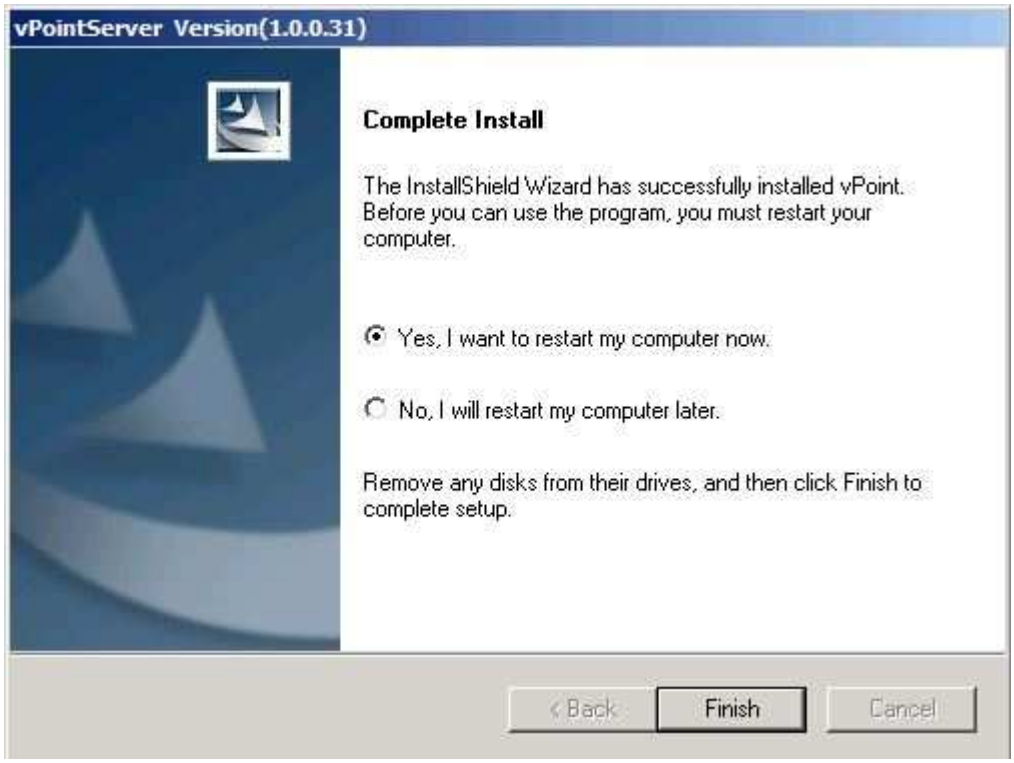
Click “Finish”:



81

Click “Finish” to restart the server. Picture 82:

.

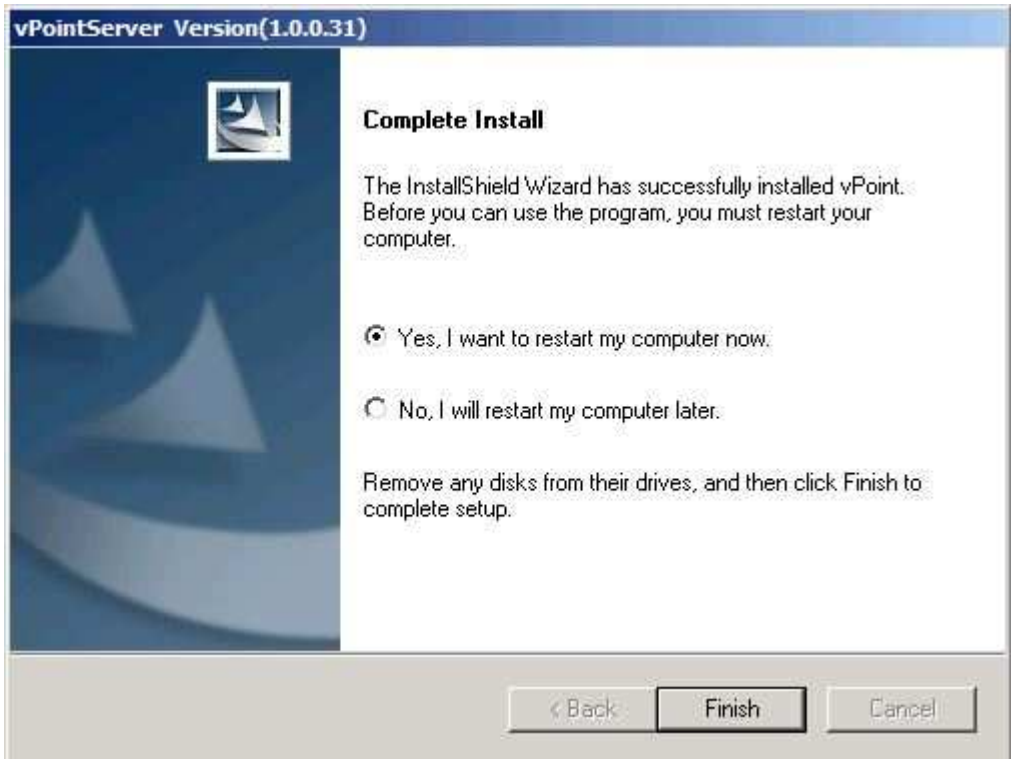


82

If you choose to uninstall VirtualBox also, a pop up window will show by the end of VirutalBox un-installation, asking if you want to restart the server. Please click "No" as vPoint un-installation have not finished yet. Picture 83:

83

A few seconds later, click "Finish" to restart the server when this windows shows up. Picture 84:

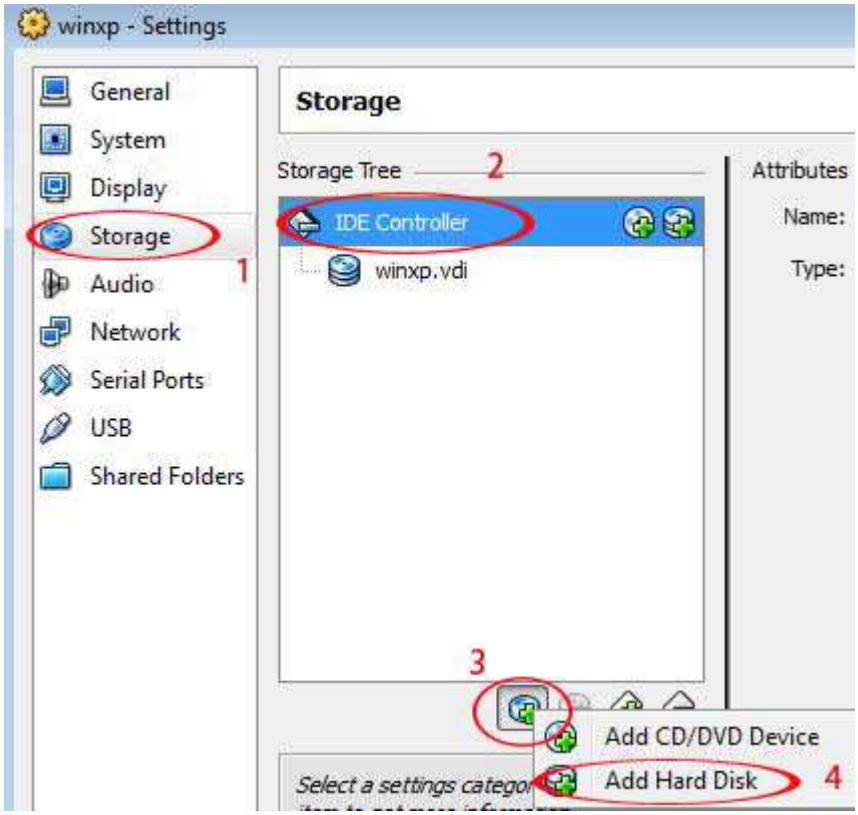


84

Appendix 1: Add more virtual hard drives to virtual machine

In production environment, we may need more storage space (more often hard drives) to store user data. In the previous steps, we have set up one virtual hard drive for the virtual machine, which has been used by the operation system (drive C). So, adding more storage space means we need to add at least one more virtual hard drive to this virtual machine so that we can have storage space for user data. To store user data in a different virtual hard drive instead of drive C is also a safety measure to protect the user data from damages as caused by system failure or a snapshot restoring operation.

Click on the virtual machine for which you going to add virtual hard drive, then "Settings", "storage", "IDE controller", See picture 85：



85

Choose “Create new disk”, Picture 86:

86

Follow the Wizard to complete the process. Picture 87:

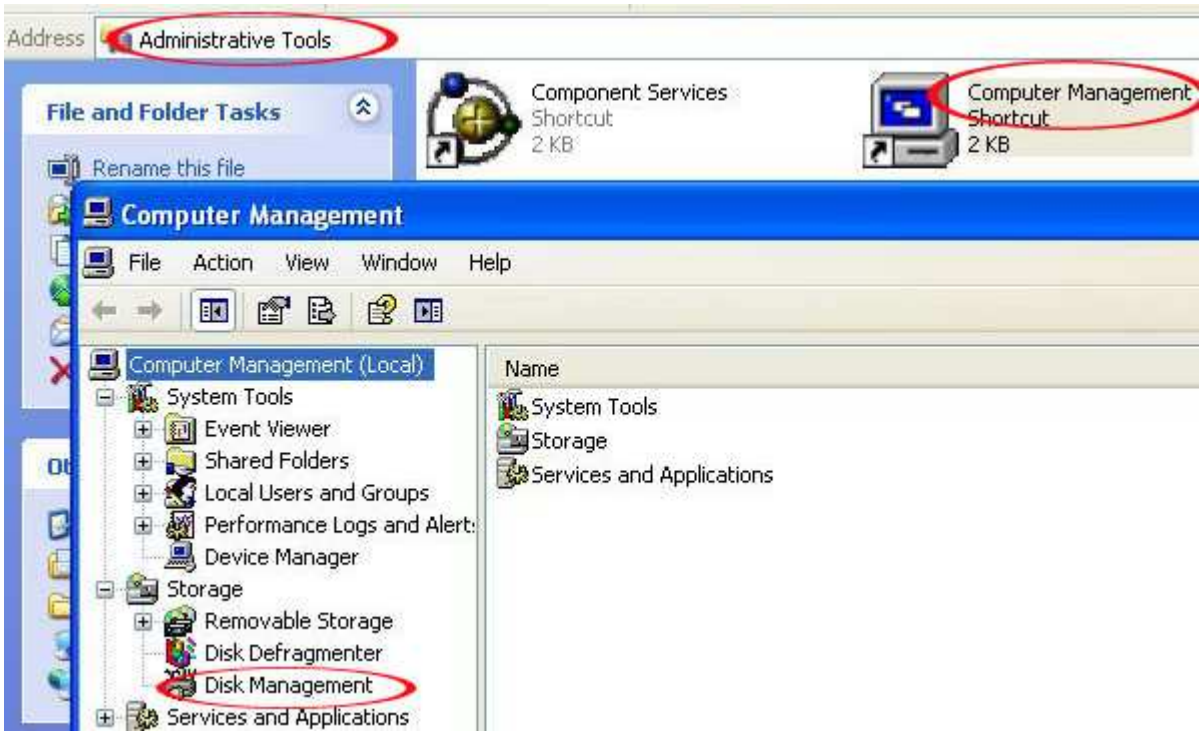
87

When it is done, you can see a new hard drive is attached to the IDE Controller. Picture 68:

88

After all these have been done, we still need to log onto the virtual machine to activate the newly added virtual hard drive. Here are the steps:

Start the virtual machine with newly added virtual hard drive. Click "Start", "All Programs", "Administrative tools", then "Computer management". See picture 89：

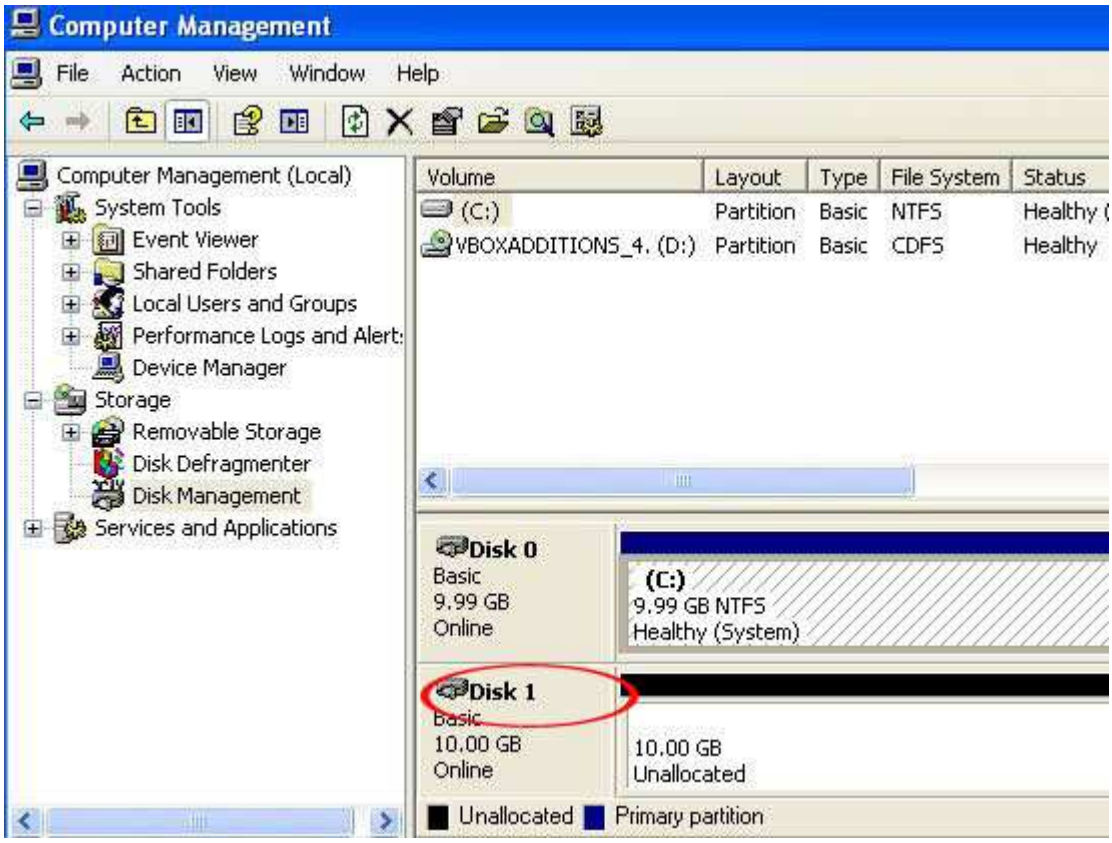


89

In the popup window, choose "Disk Management". A new window called "Initialize and Convert Disk Wizard" will pop up. Follow the Wizard to complete the process.

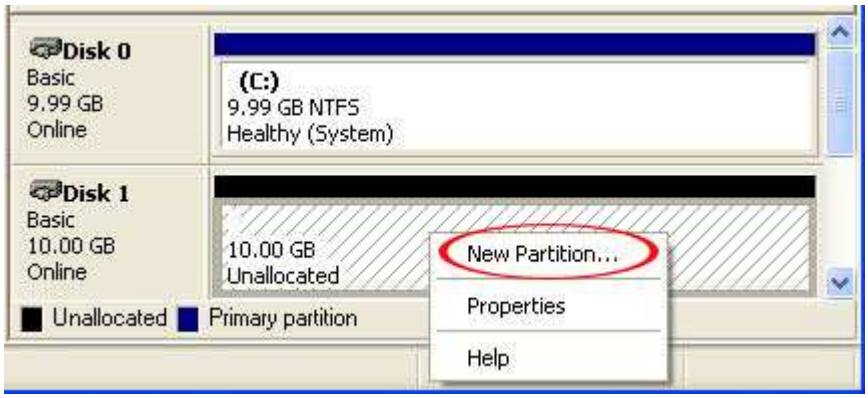
90

When it is done, a new disk “Disk 1” will appear in the drive list. The status is “Unallocated”.



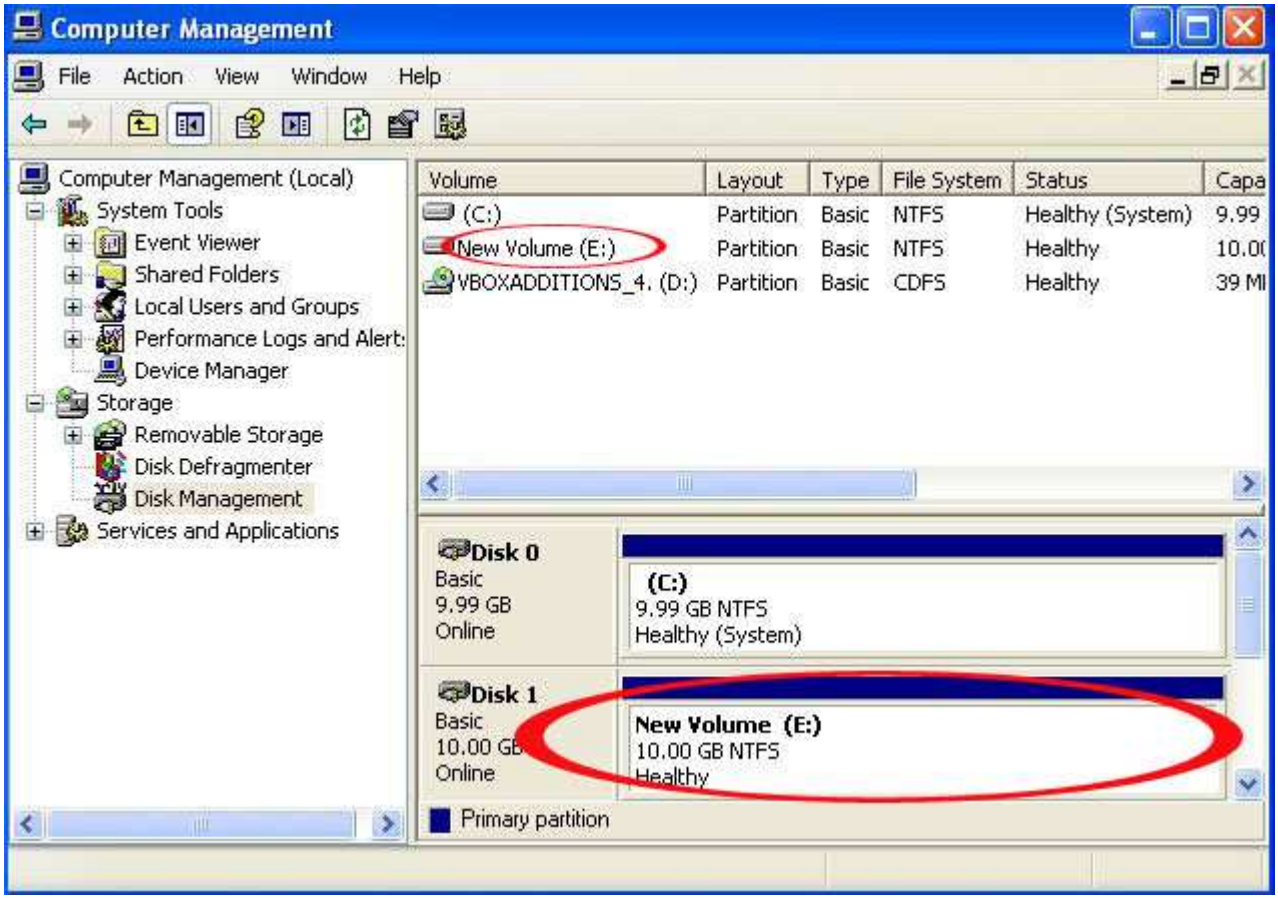
91

Right click this new drive, and then choose “New partition”. Follow the Wizard to complete the process.



92

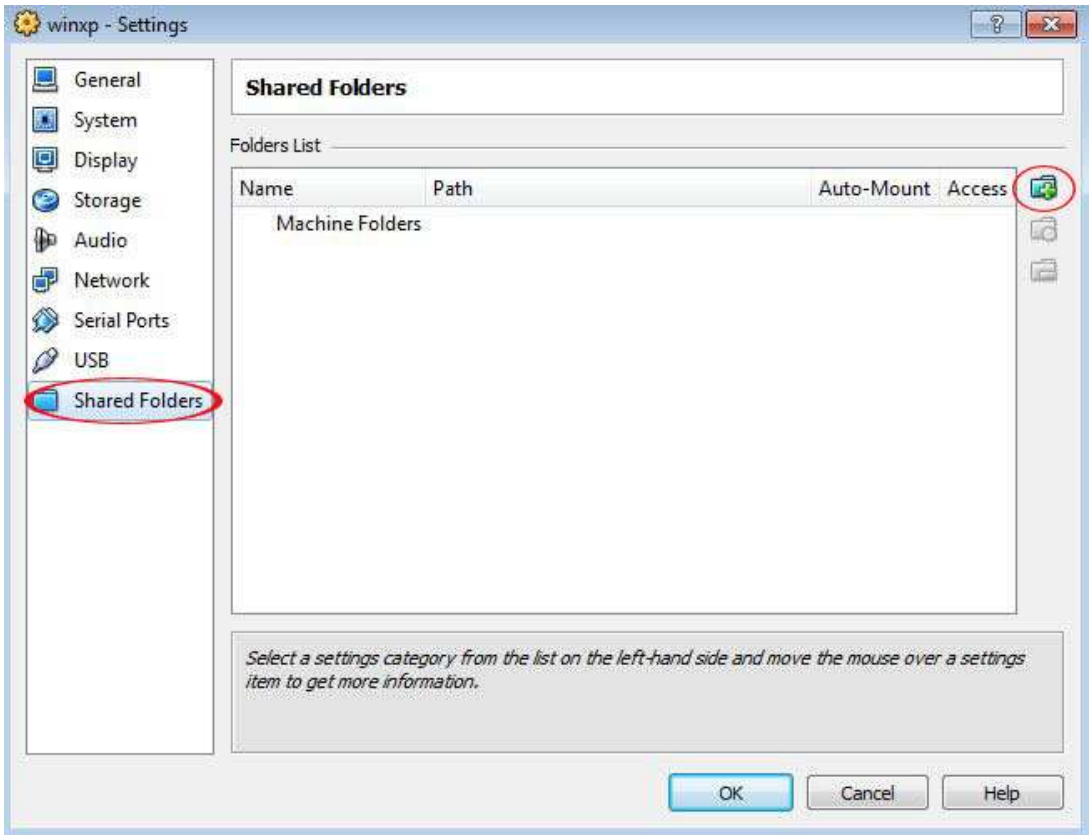
When it is done, “Disk 1” will be activated and formatted. You can see a “New Volume (E:)” is available now.



Appendix II Add “Shared Folders” to the virtual machine

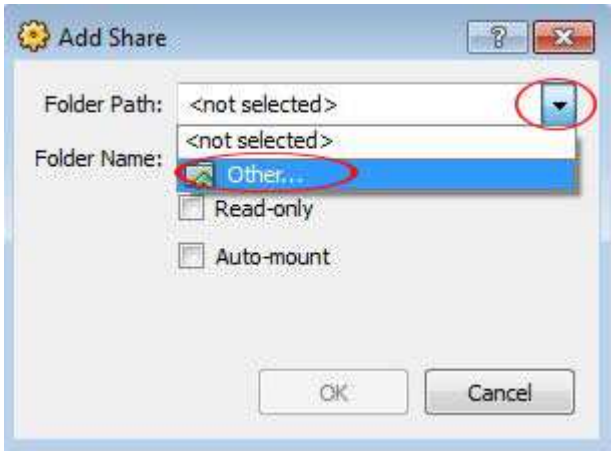
In production environment, we may need to have a storage space where all users (virtual machines) can access files which are shared among all the users (or group of users). In the VDI solution, we can achieve this by creating a “shared folder” in the host PC (Server) hard drive and then share it among the users (or group of users).

In the settings page of virtual machine, click on “Shared Folders”, and then click on the Add symbol. Picture 94：



94

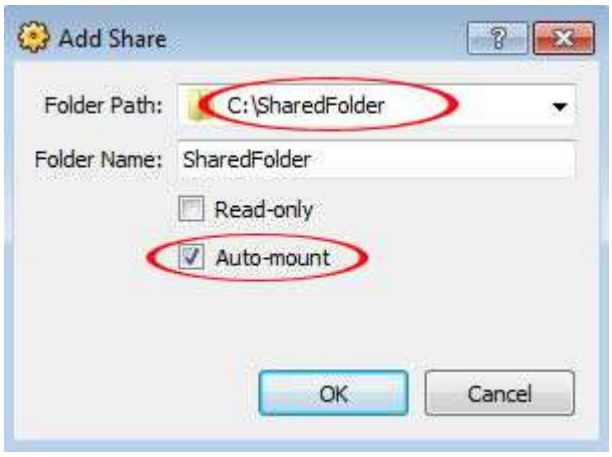
Choose the location:



95

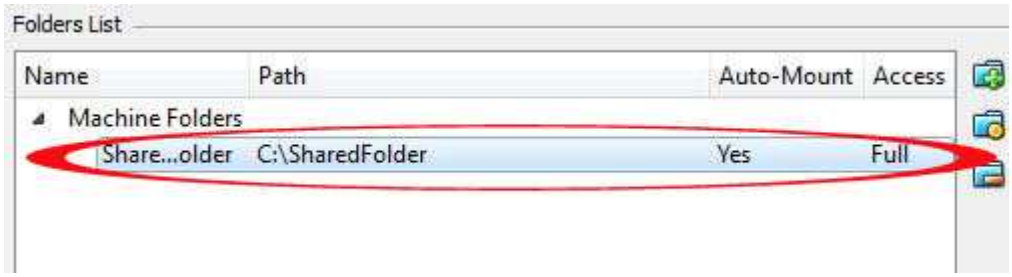
96

Choose "Auto-mount". Then click "OK" to finish.



97

We can see in the "Folders List", the folder we've just chosen is shown. See picture 98:



98

Start the virtual machine, we can see "SharedFolder on 'vboxsrv' (F:)" as Network Drives. Picture 99:

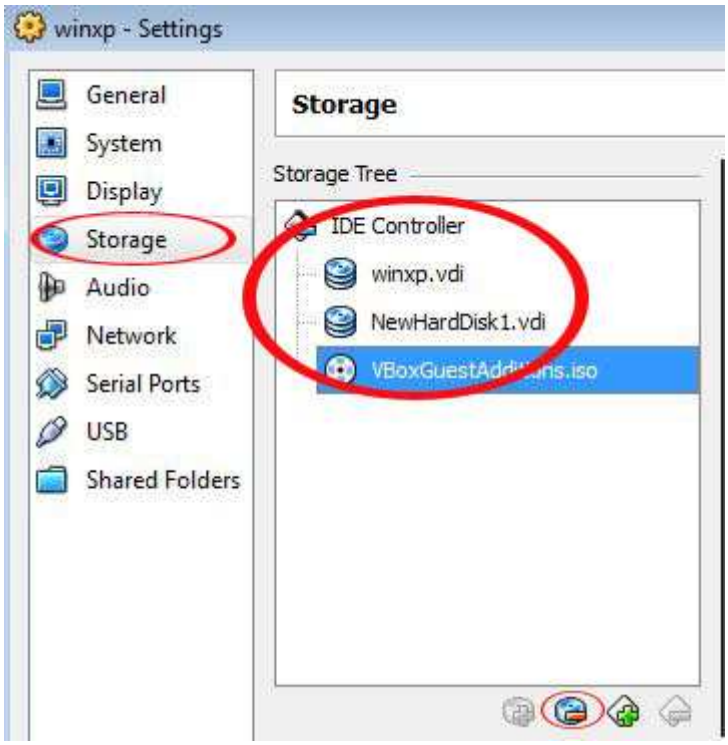
99

Appendix III Take Snapshots and restore Snapshots of Virtual Machines:

Operation Systems like Windows may suffer from various kinds of problems like system failure or virus affection. VirtualBox has a backup function called “Snapshot”. We can take a snapshot when we have installed all the programs and have done all the configurations.

Since VirtualBox will take snapshot for the whole machines (including all hard drives), we need remove all the Virtual Drive except Drive C (system drive) before taking snapshot—we do not want the other drives with user data to be affected by the snapshot.

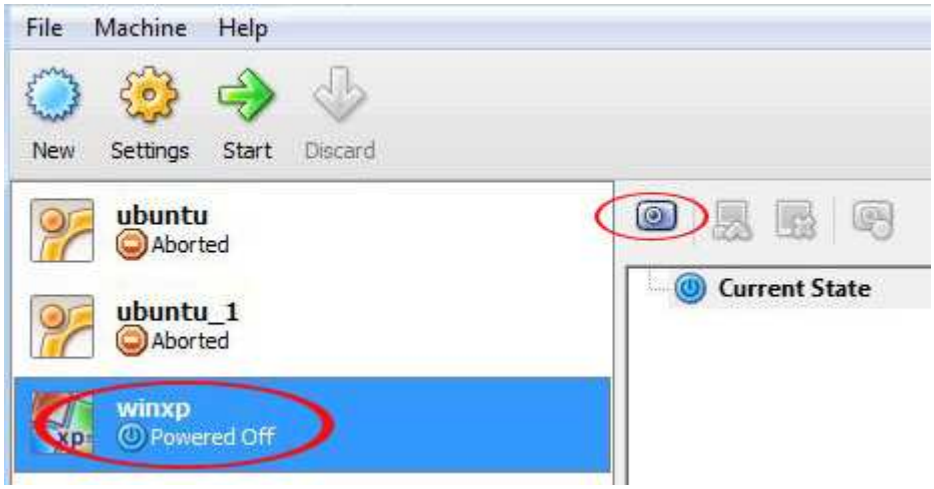
Go to the Settings of virtual machines, click on “Storage”, remove all the drives except the system drive “winxp.vdi”. See picture 100 & 101：



100

101

Then go back to VirtualBox Manager, choose the virtual machines that we are going to take snapshot of. Click on the "Camera" button:



102

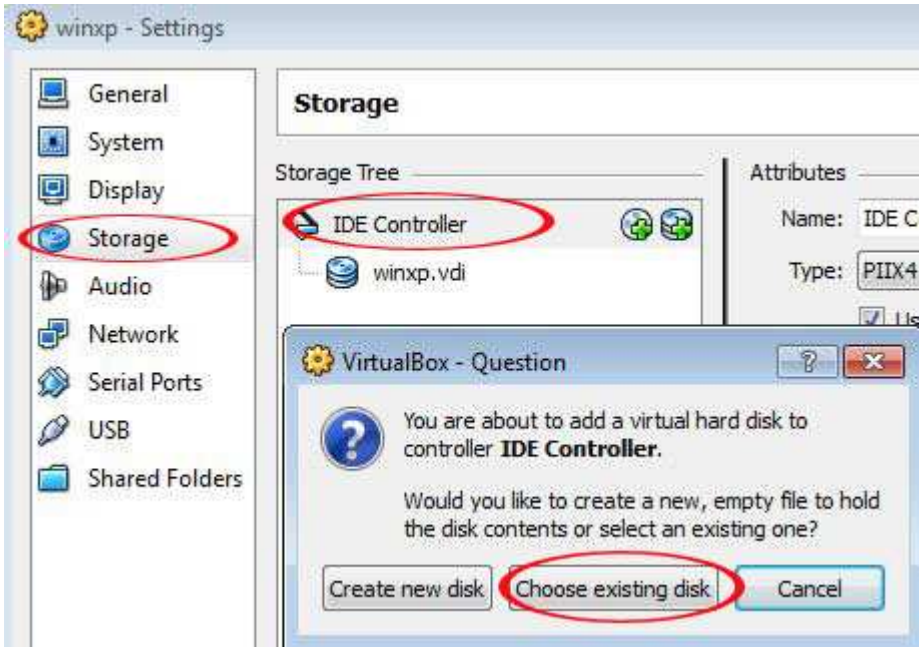
The popup window shows Snapshot Name and you can also input some words as Snapshot Description. Click "OK" to finish. Now you can see "Snapshot 1" in the list. Picture 103 & 104:

103

104

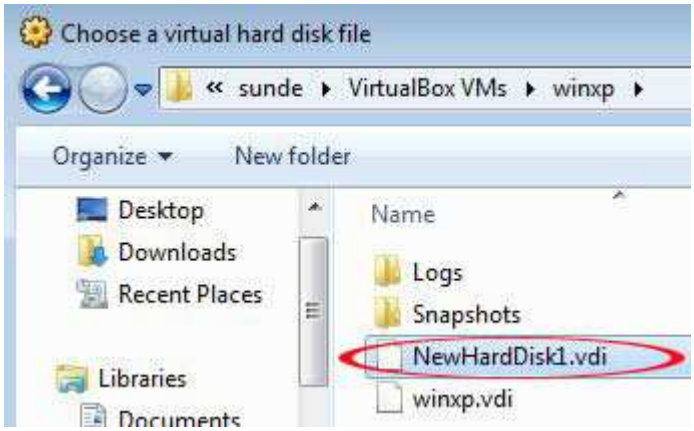
After the Snapshot is done, we need to add back the removed virtual drive.

Just like the way we add Drive D (data drive) to the virtual machines, we need to go to the "Settings", and then" Storage". Here we need to click "Choose existing disk". Picture 105:



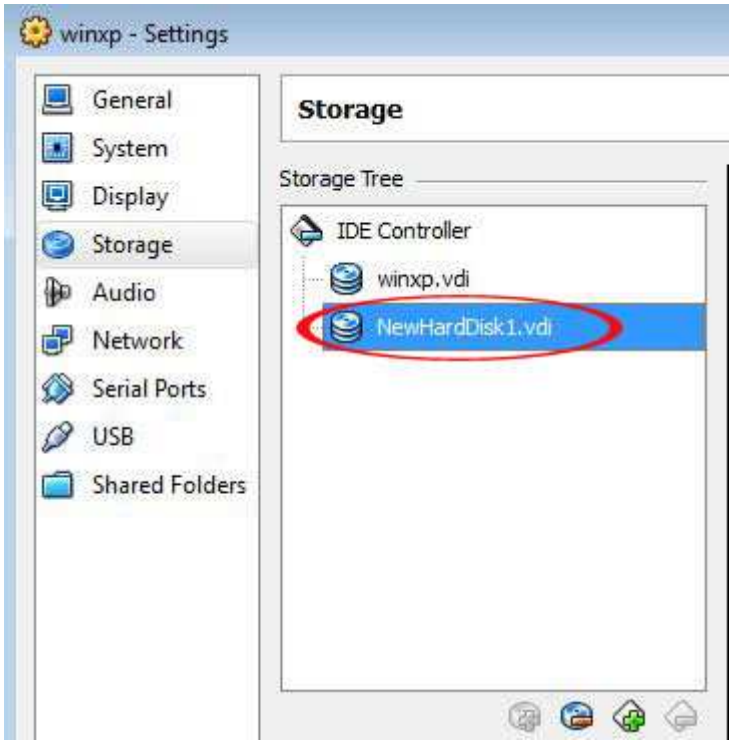
105

Go to the folder, and add the virtual drive we have removed earlier:



106

Now you can see the virtual drive is back:



107

When the virtual machines suffer a system failure or corruption, we can restore the snapshot. Remember, a newly restored virtual machine is of settings without data drive (often drive D). So we need add back the data drive. Just follow the steps above to accomplish this.