

# Creating A Virtual Machine for Microcosm

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This article describes creating a Windows XP Virtual Machine (VM) to run the early hypertext application Microcosm using VirtualBox. This process is documented under macOS 10.13.5.

## 1. Virtual Box Software

This process uses - as at time of recording - VirtualBox v5.2.12 r122591 (Qt5.6.3) with the VirtualBox Extension Pack v5.2.12 r122591 installed. *Both* items are needed. A later requirement (below) for a 'Guest Additions' package is taken care of by the the install of the main components listed above (which presumably contain the extra package). Note, the VM created has working happily in updated VBox versions since buidl though building a new VM may show extra/different UI options.

Both the app and extension pack can be downloaded from <https://www.virtualbox.org/wiki/Downloads>.

This process was originally tested a year ago and VirtualBox has since been updated several times with no harm to the original test VM. Thus it should be fine to use the current version of the VirtualBox app and extension when using the process described in this manual.

## 2. Other Requirements

The host Mac (or PC) needs a CD drive or be able to mount CD-like ISO equivalentents as virtual drives. In this manual, both the Windows OS and Microcosm were installed from CD. Note that as old system CDs are often now stored with the serial code on the CD make sure you have a copy of the serial code elsewhere as in both cases it is needed whilst the CD is in use.

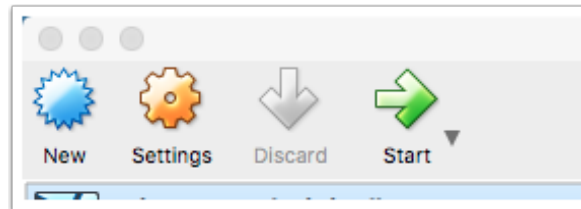
The OS used for the VM is XP (32-bit) which represents an available/licensed OS and one that is compatible with Microcosm although the version of the later is from 1999 some two years before XP was released.

The host computer does not need internet access for this install process, but it may be useful e.g. for downloading.

Although the process is documented using a Mac, it should be possible to use VirtualBox on a PC to do the same process if preferred. Working with a UK Mac keyboard onto a Windows system it should be noted that a couple of common keys need and unusual input on the Mac host. Use Mac ` (back-tick) for a / (forward slash) on the windows VM. Likewise, use Shift+2 on the Mac to get a " (straight double-quote) on the VM.

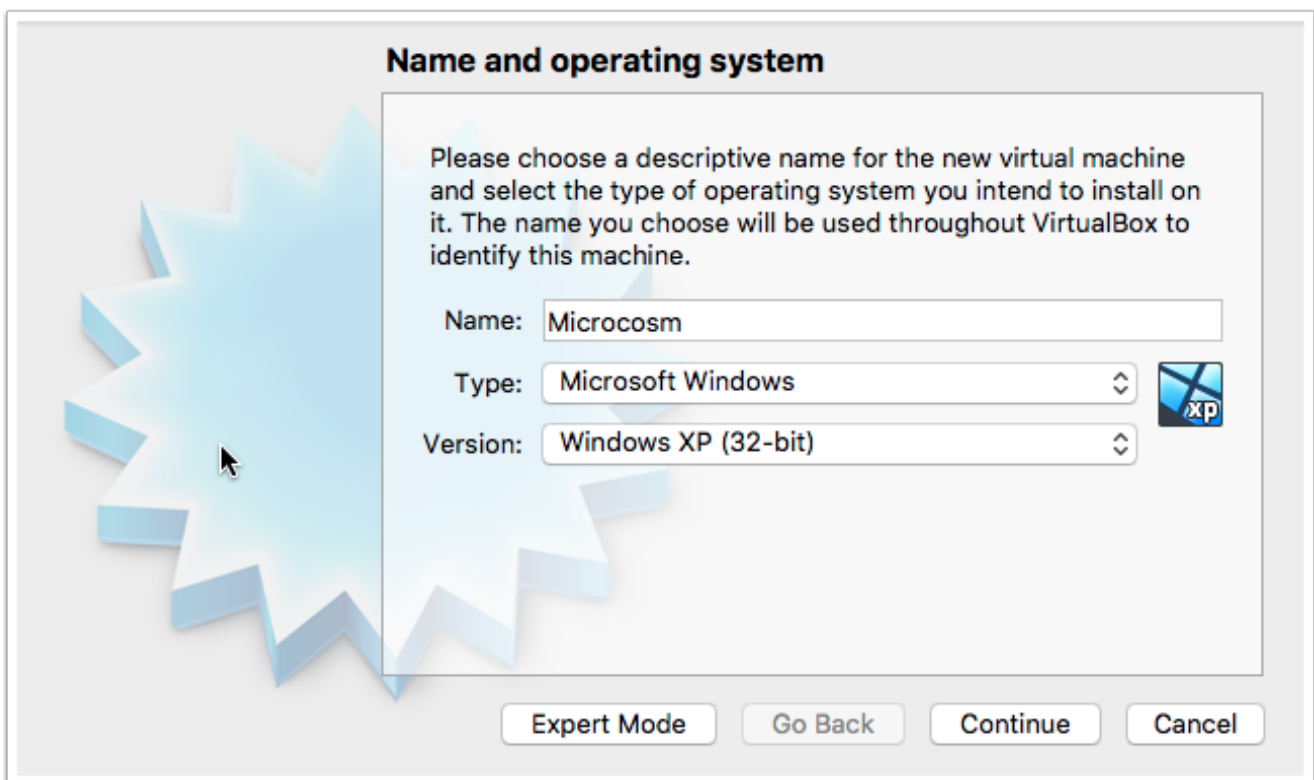
# Creating A Virtual Machine for Microcosm

## 3. Set up a new VM.



From the VirtualBox toolbar, click the **New** button. Note many of the settings made in the configuration stages can be altered subsequently in the VM's Settings. The settings are accessed via the toolbar icon (second from left) when the VM is selected in the VirtualBox VM list.

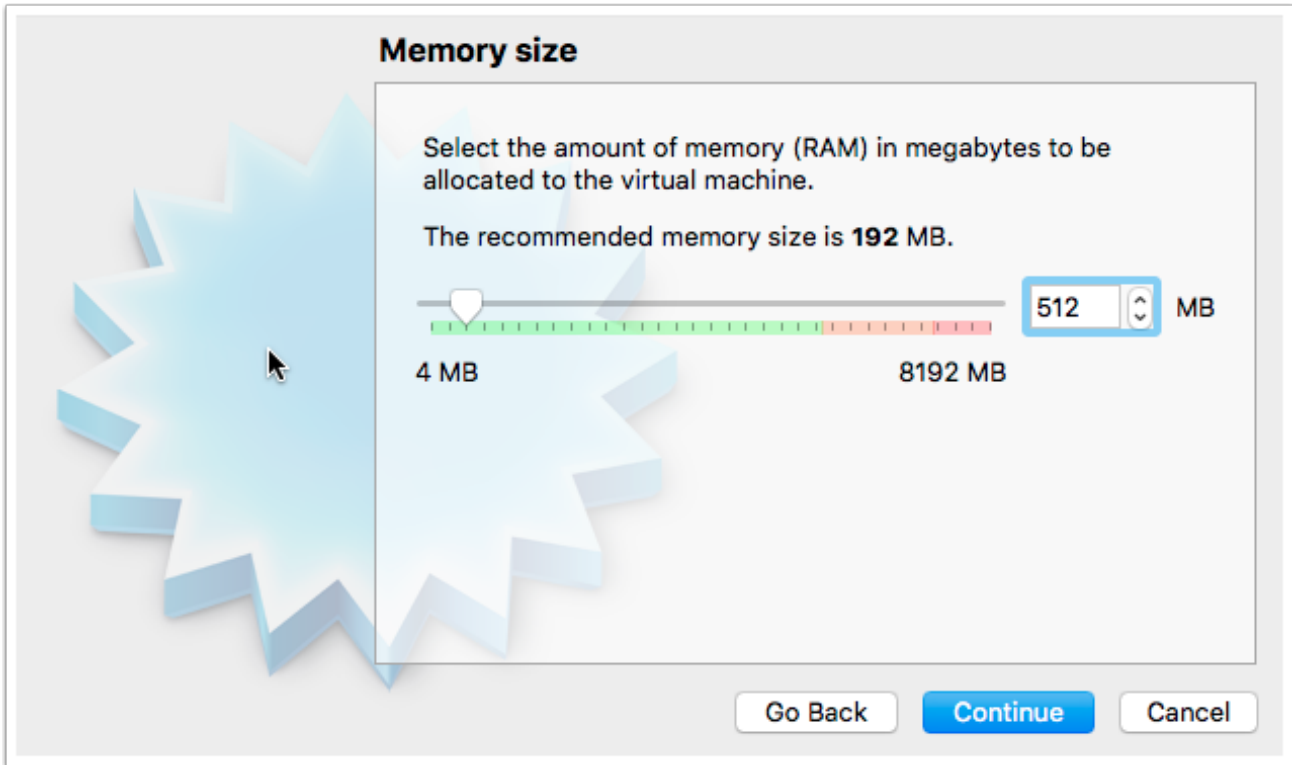
### 3.1 VM Configuration - Name & OS



Select the **Type** and **Version** as shown. Add a **Name**.

# Creating A Virtual Machine for Microcosm

## 3.2 VM Configuration - Memory

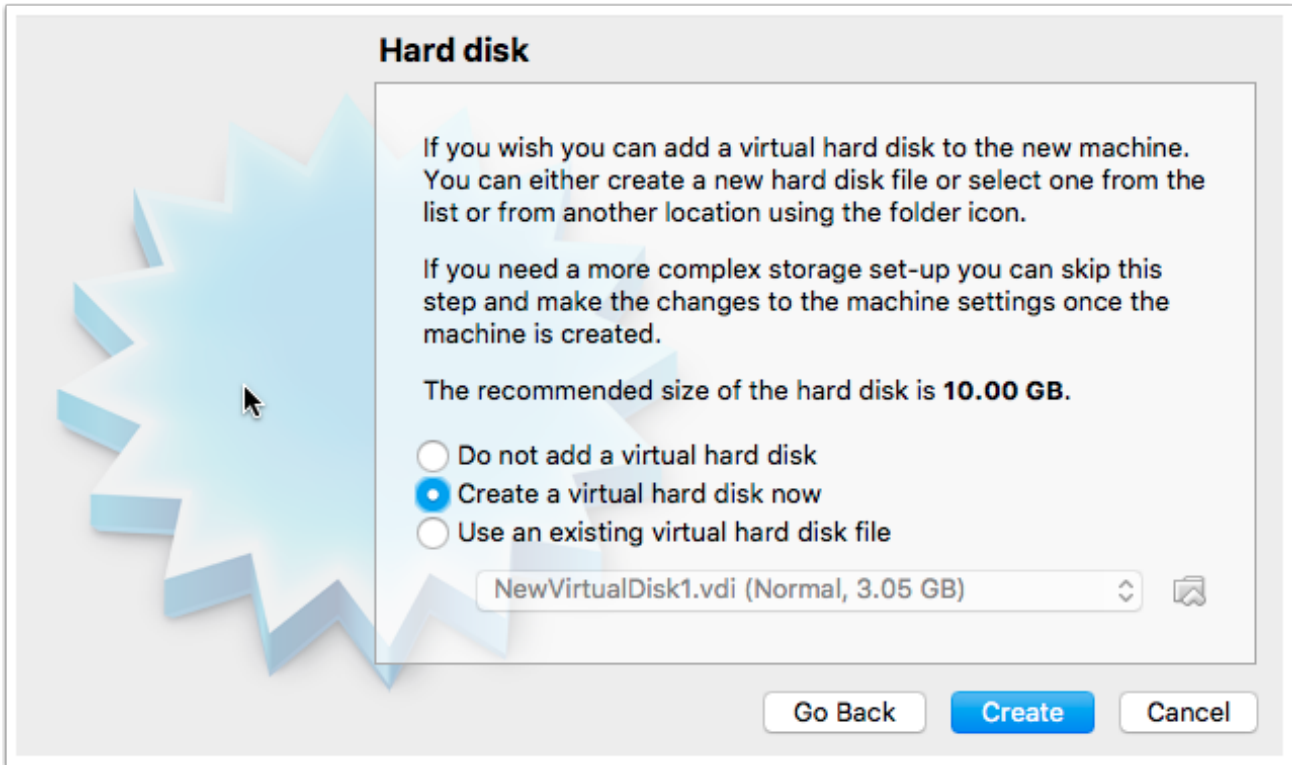


Set 512MB (1GB) virtual memory. This acts as the system RAM for the OS installed on the VM.

See the later note 'VM Virtual RAM and Swap File Size' for considerations on the effect of Virtual RAM allocated, the virtual disk size and the Windows pagefile size.

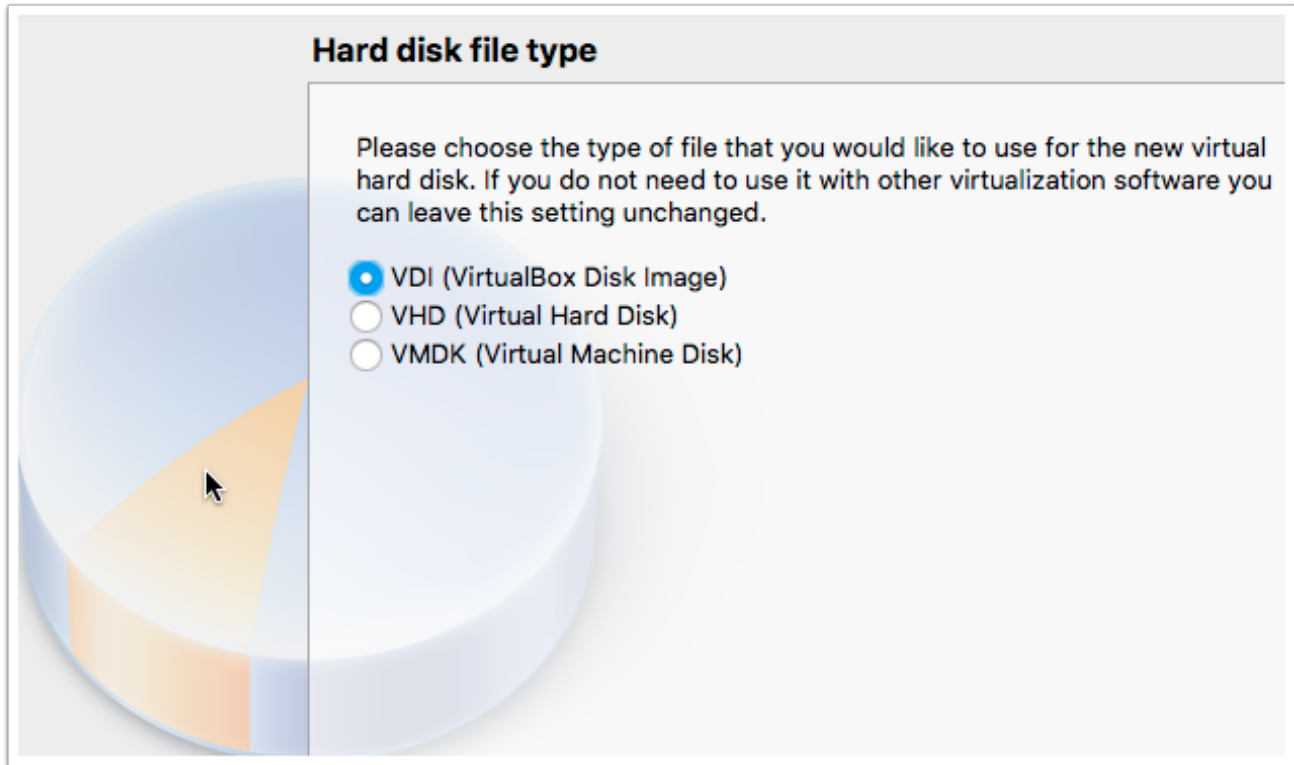
# Creating A Virtual Machine for Microcosm

## 3.3 VM Configuration - Hard Disk



Select the option **Create a virtual hard disk now**.

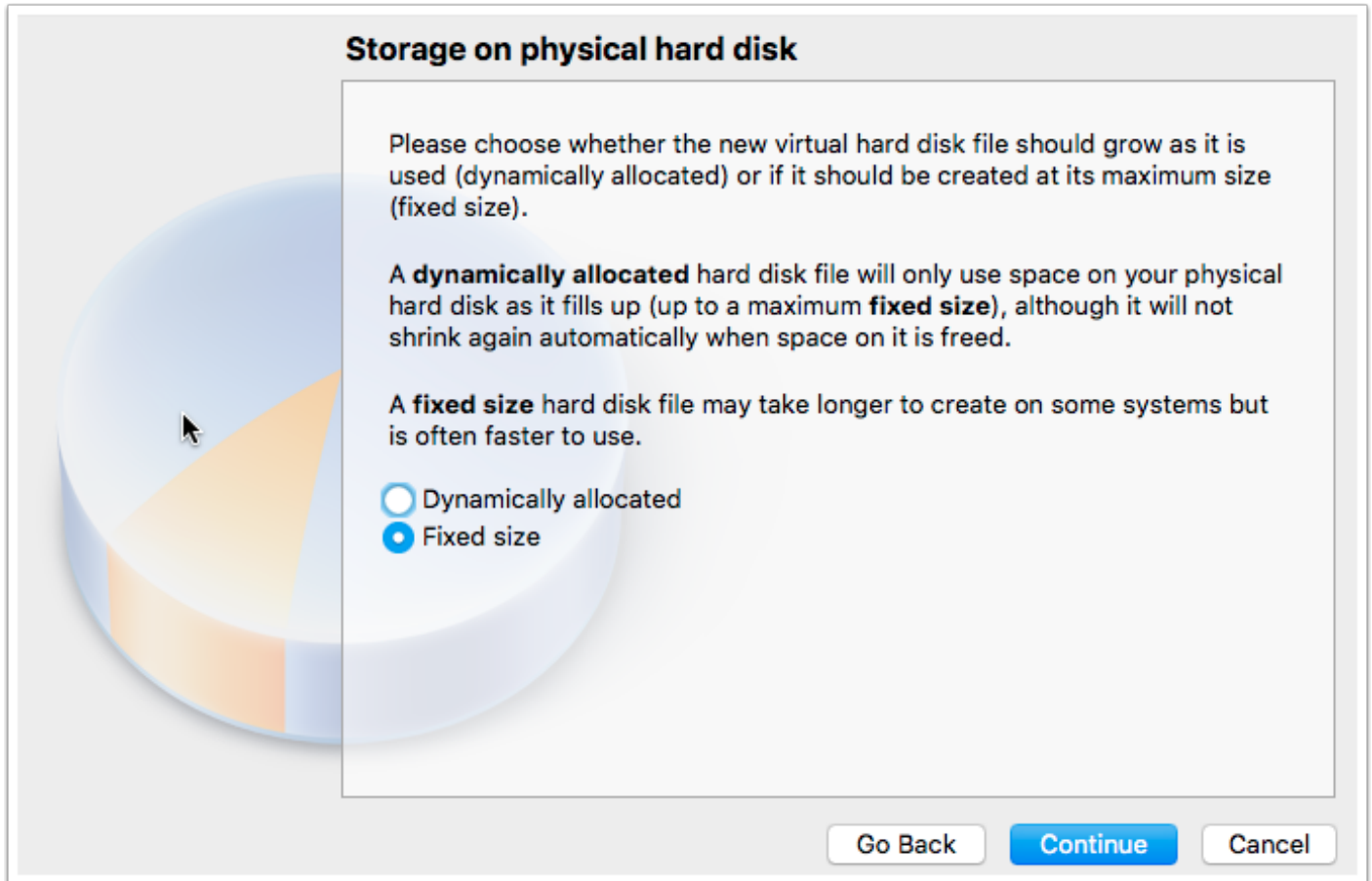
## 3.4 VM Configuration - Hard Disk File Type



Accept the default of VDI.

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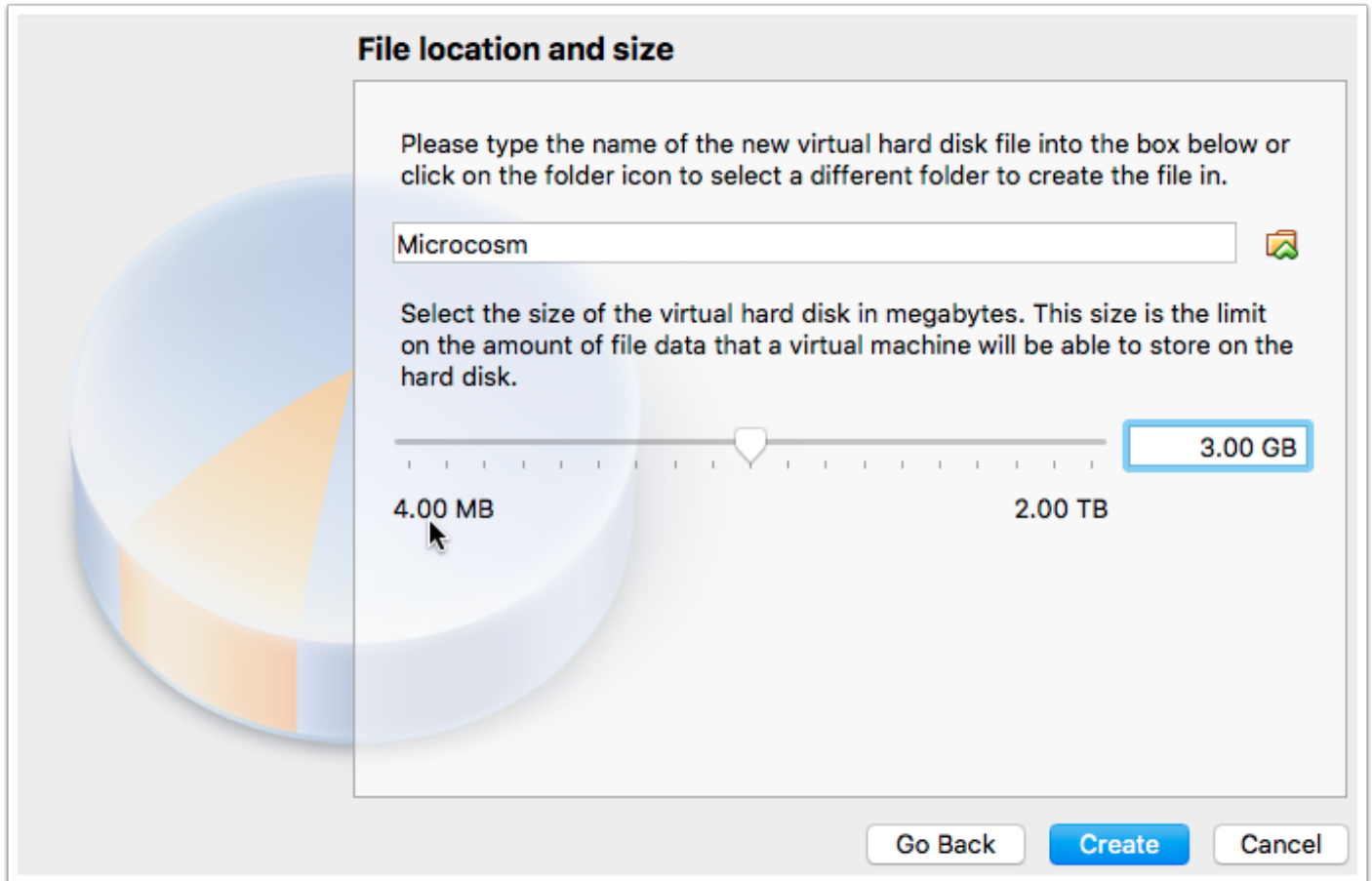
## 3.5 VM Configuration - Hard Disk Size 1



Select the **Fixed size** option. As this VM will be curated and shared it helps to keep a known, fixed, size.

# Creating A Virtual Machine for Microcosm

## 3.6 VM Configuration - Hard Disk Size 2



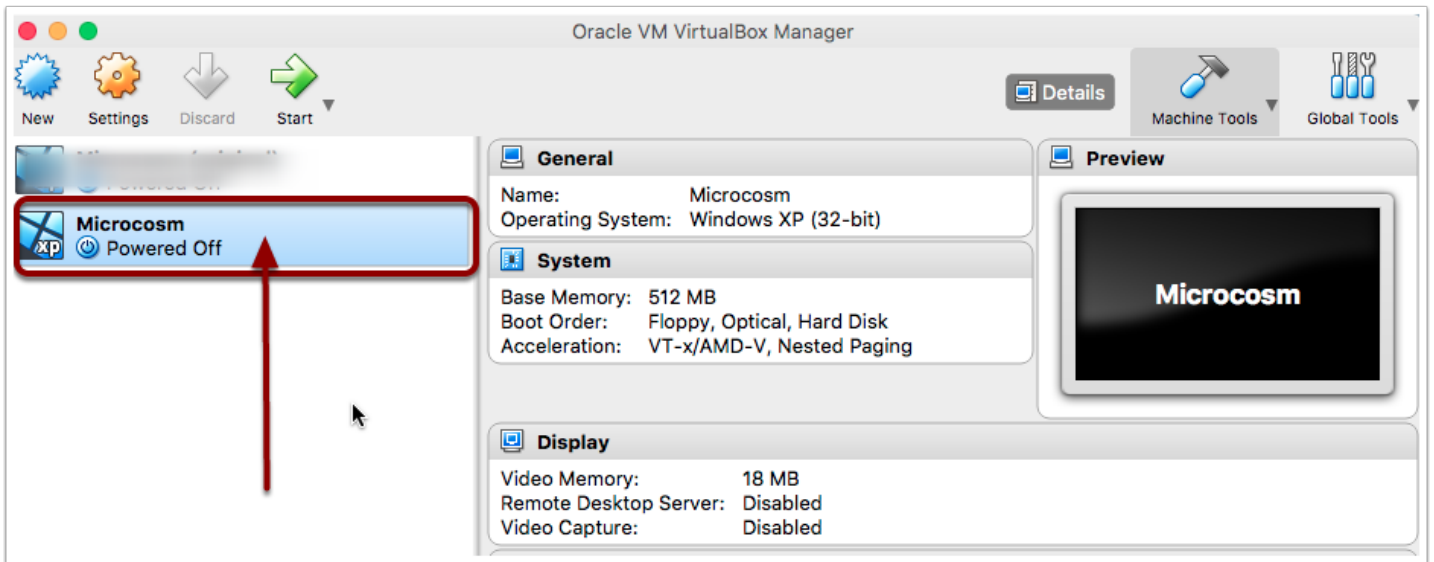
The default disk name will be the name of the VM but can be different. Note: the disk cannot be renamed once created.

Set the disk size to 3.00 GB. If space is tight 2.5GB may suffice. Note the FAT-32 drives (e.g. most USB drives) can't handle files greater than 4GB.

Click **Create** to create the disk.

# Creating A Virtual Machine for Microcosm

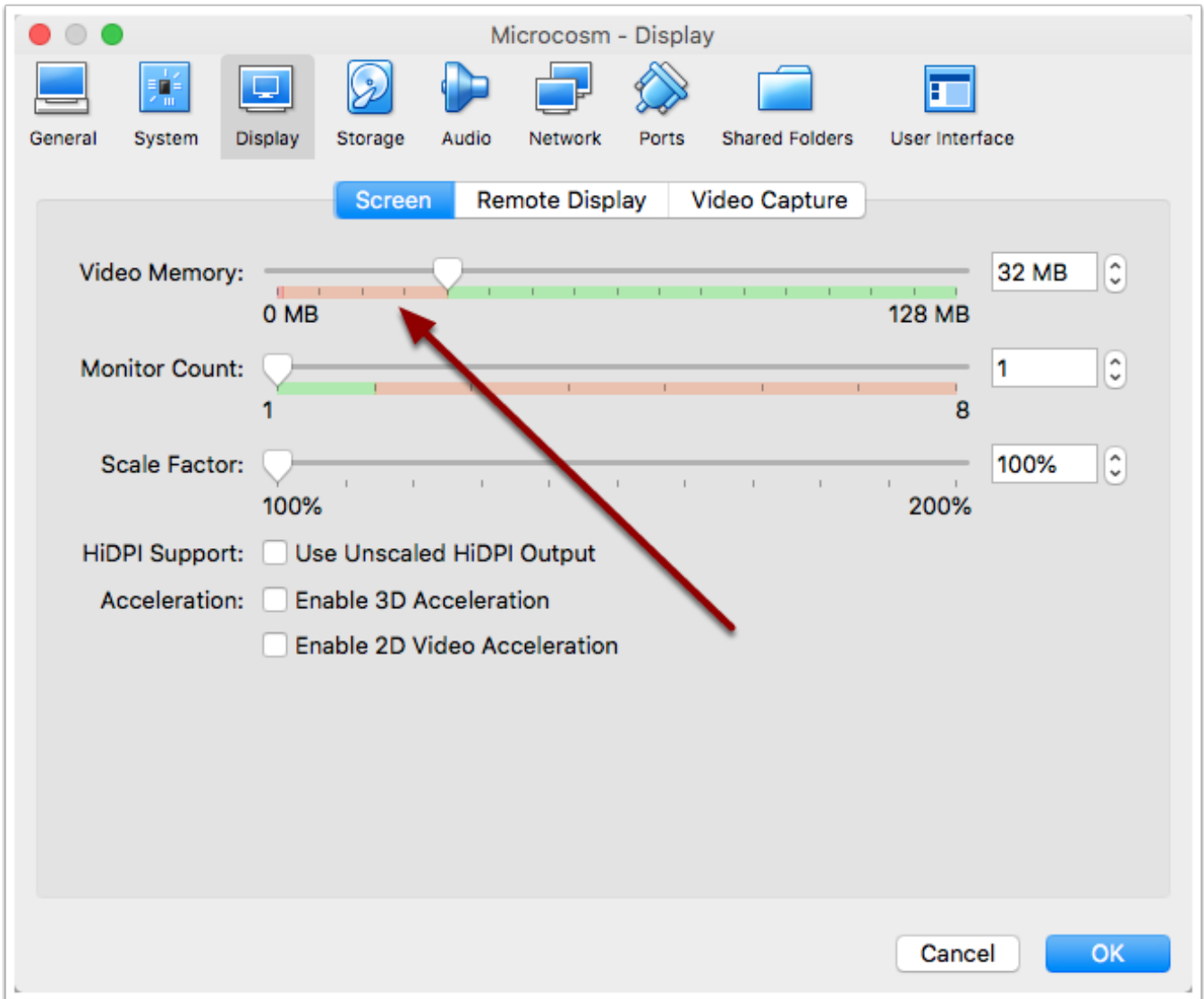
## 4. Empty VM complete



The new VM is no added to the list.



## 5. Adjust Video Memory



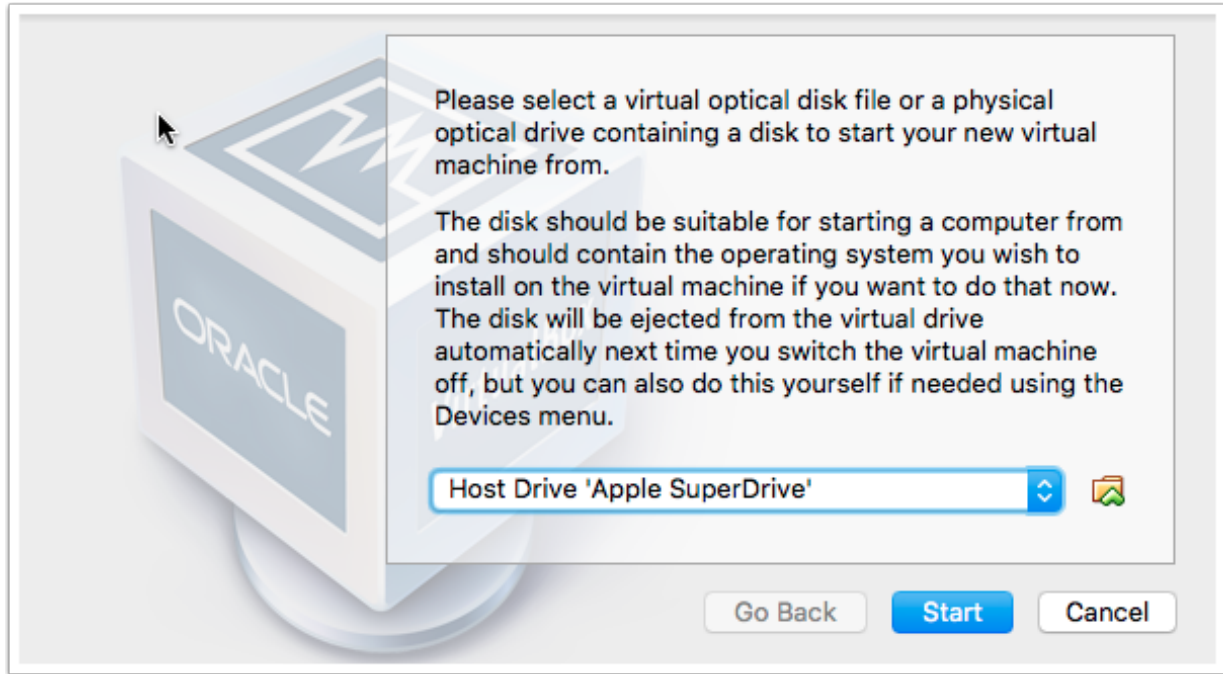
With the new VM selected, open its Settings (button on the main toolbar) and select the **Display** sub-page. On the Video Memory control drag the scrubber control from the default 16MB value to the recommended 32MB setting (the boundary of the red and green sections). Click OK to save the change and close the Settings.

## 6. Adding an OS to the VM

In this process, a copy of Win XP 32-bit was first copied to a CD. Place that CD in you host computer's CD drive. Ensure a copy of the windows serial code is to hand (i.e. not just written on the CD!) - you will need this whilst the CD is in use.

# Creating A Virtual Machine for Microcosm

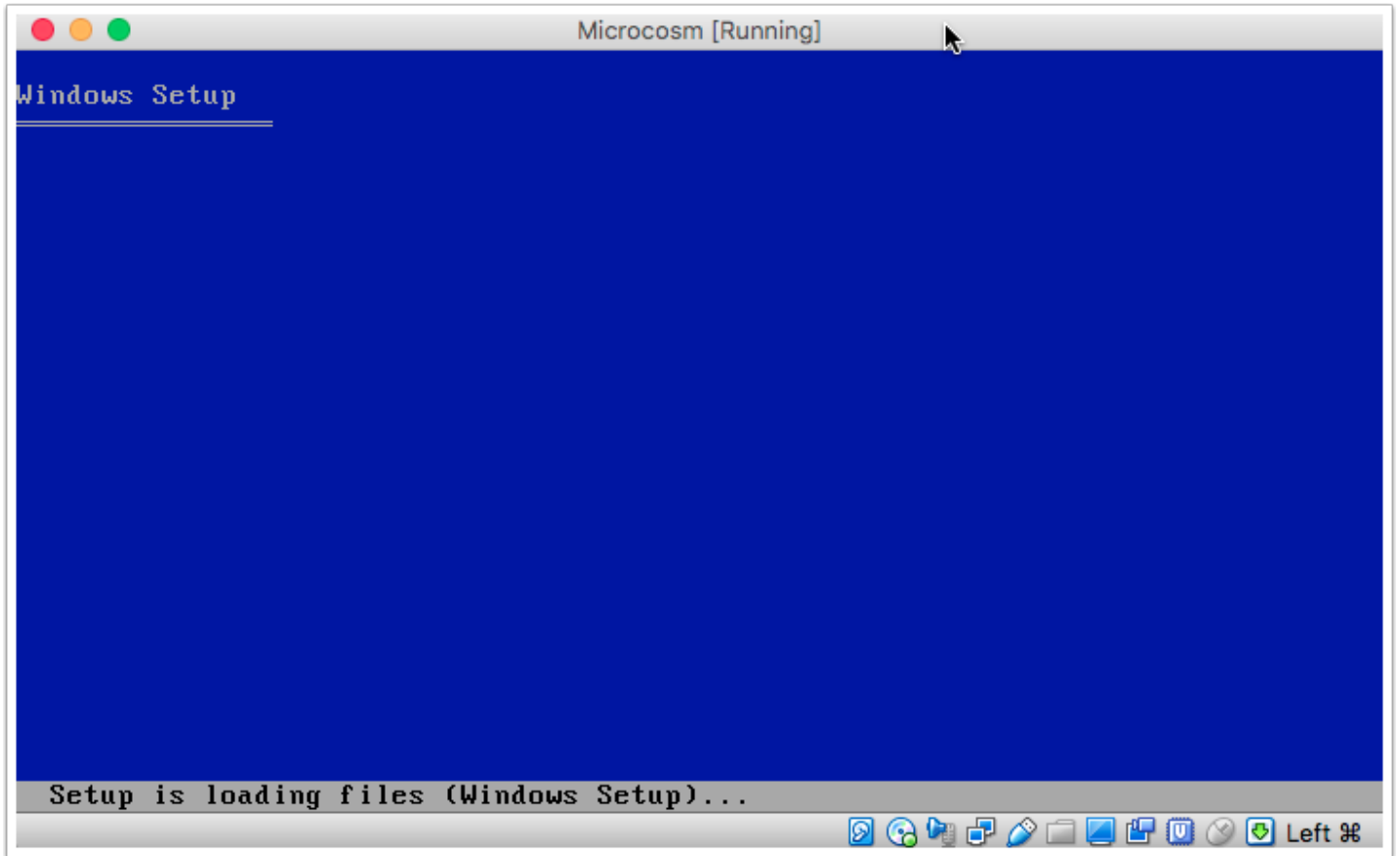
## 6.1 Adding the OS - 1



Select the host computer's CD drive from the pop-up. Or, if you have virtual CD image mounted, use the file manager icon (folder icon with green arrow) and navigate to it.

# Creating A Virtual Machine for Microcosm

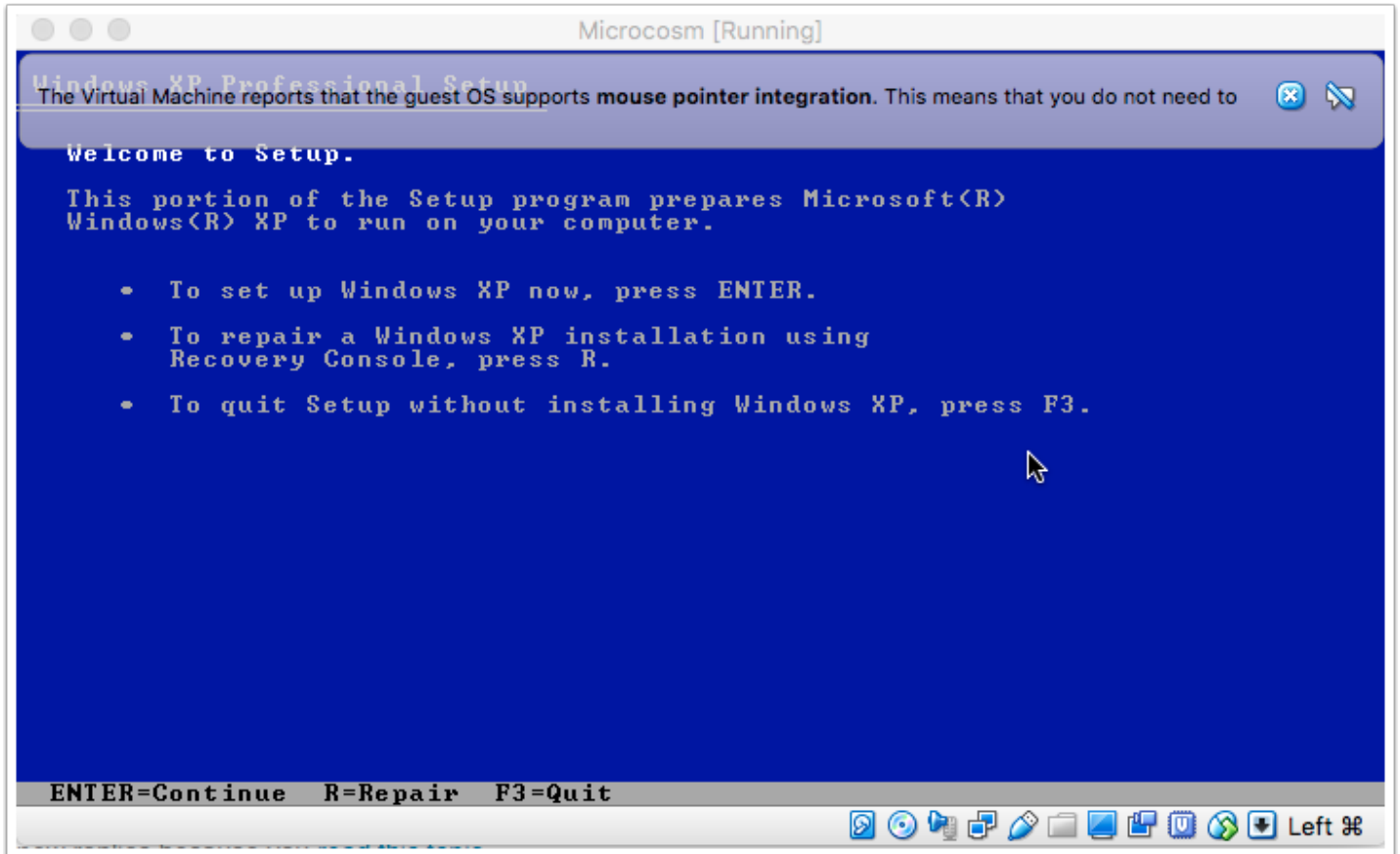
## 6.2 Adding the OS - 2



Let the Windows software load.

# Creating A Virtual Machine for Microcosm

## 6.3 Adding the OS - 3

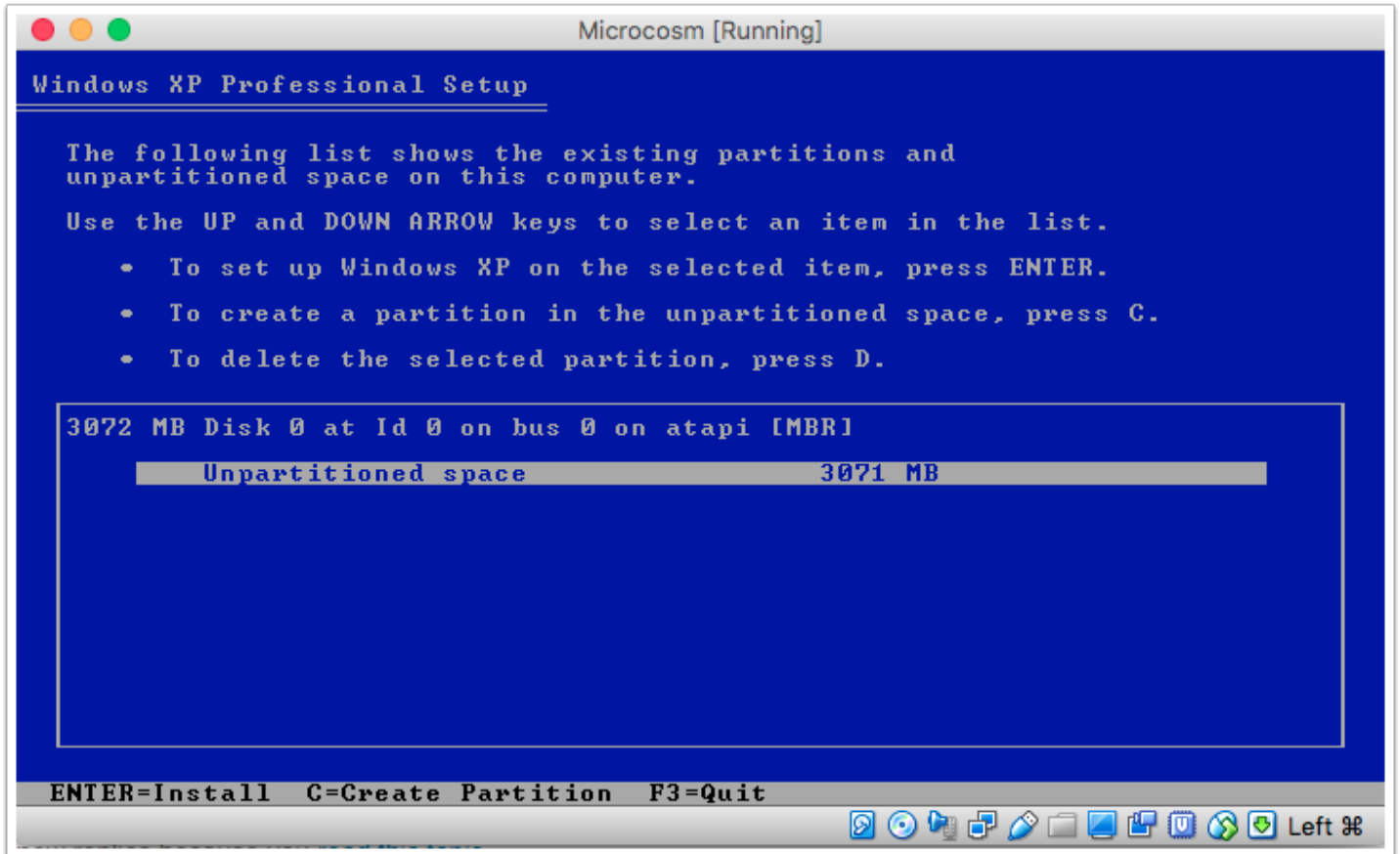


Press ENTER (i.e. the Return key).

To accept the Terms & Conditions, press F8 (Fn+F8 on a Mac)

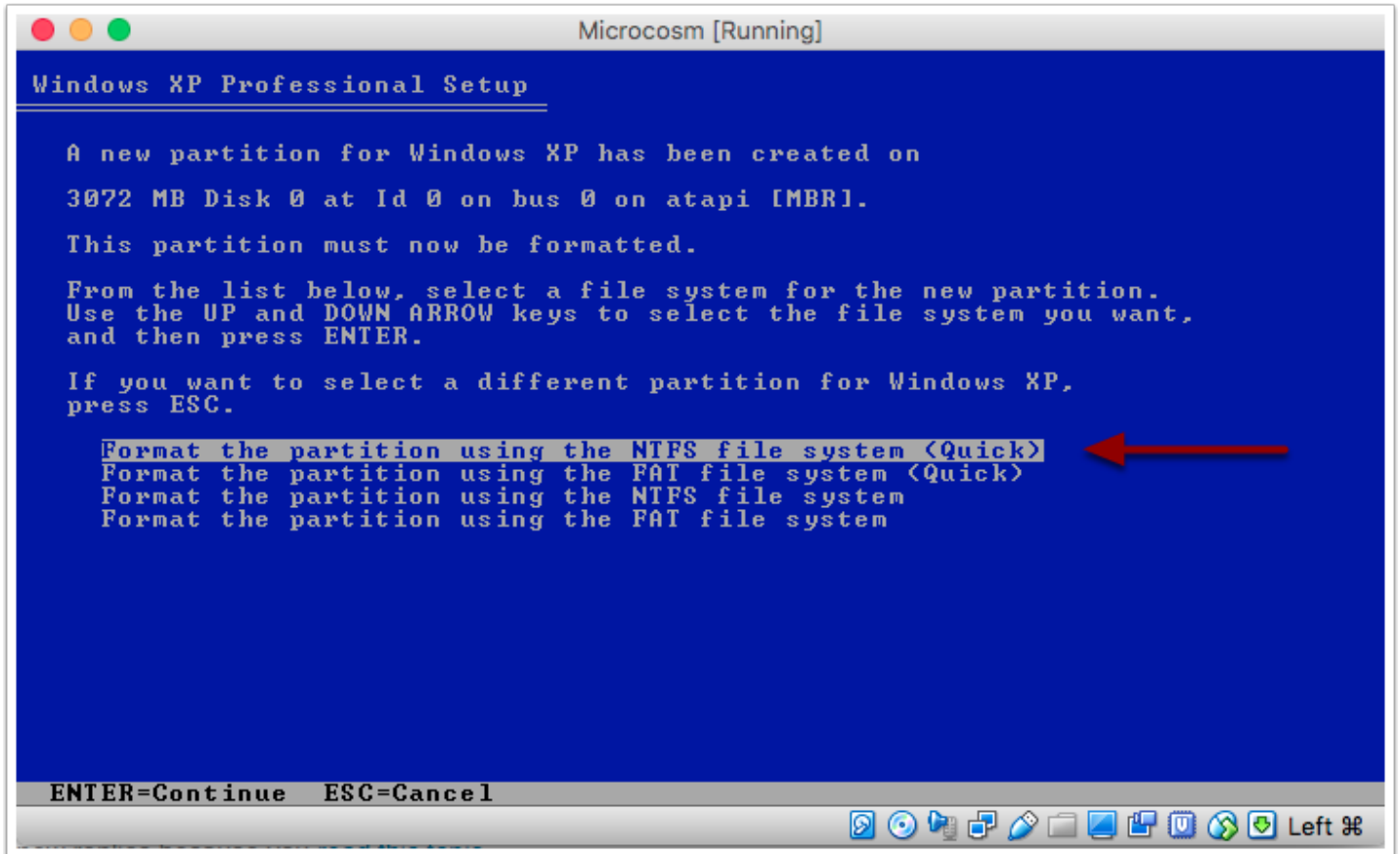
# Creating A Virtual Machine for Microcosm

## 6.4 Adding the OS - 4



# Creating A Virtual Machine for Microcosm

## 6.5 Adding the OS - 5

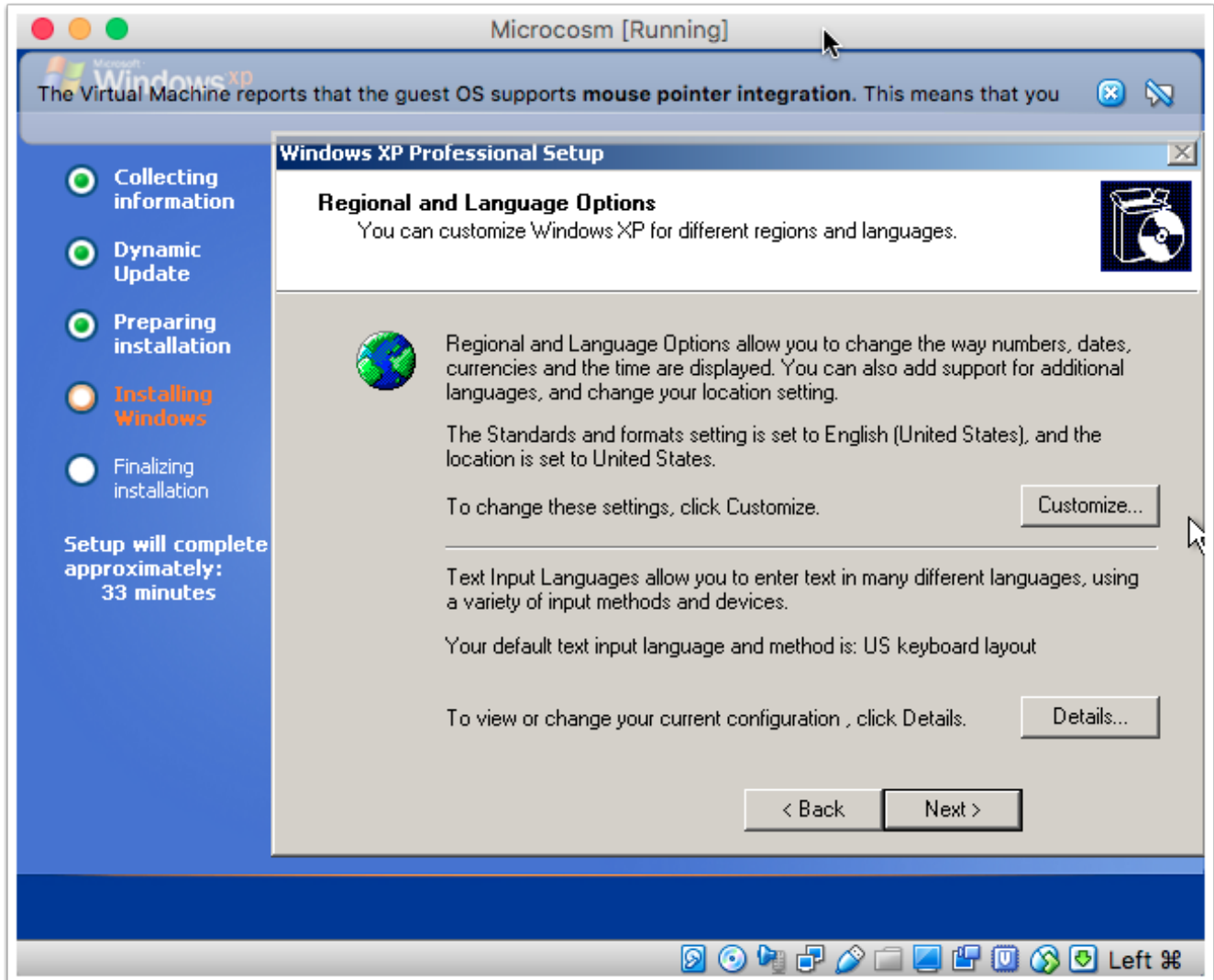


Select the first option (use the up/down arrow keys) and press enter. Allow file formatting to complete.

After the first load of drivers, the VM will reboot.

# Creating A Virtual Machine for Microcosm

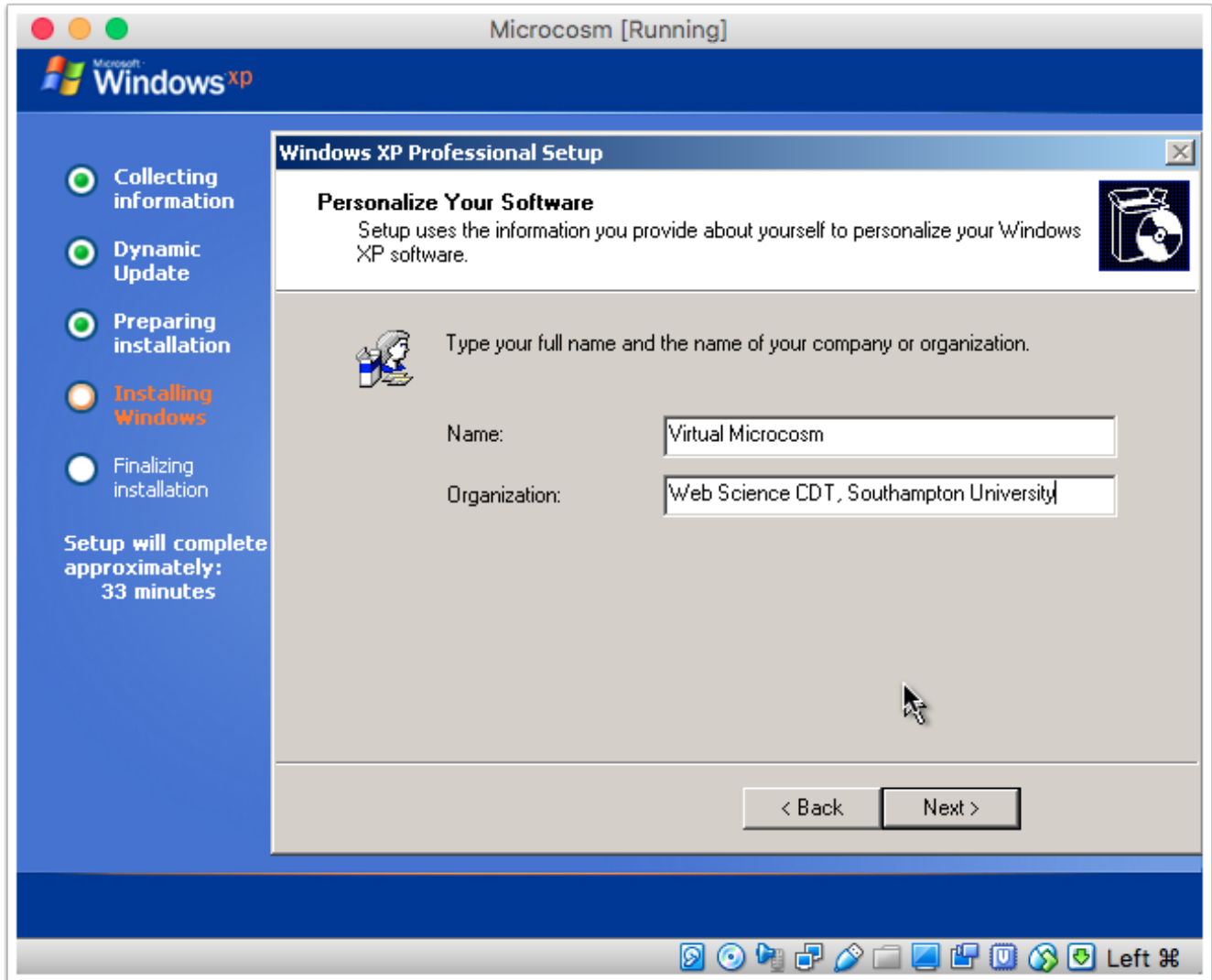
## 6.6 Adding the OS - 6



Set all options in the Regional and the Text Input Sections to "English (United Kingdom)" from the default of US English (Microcosm was UK-made software).

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## 6.7 Adding the OS - 7

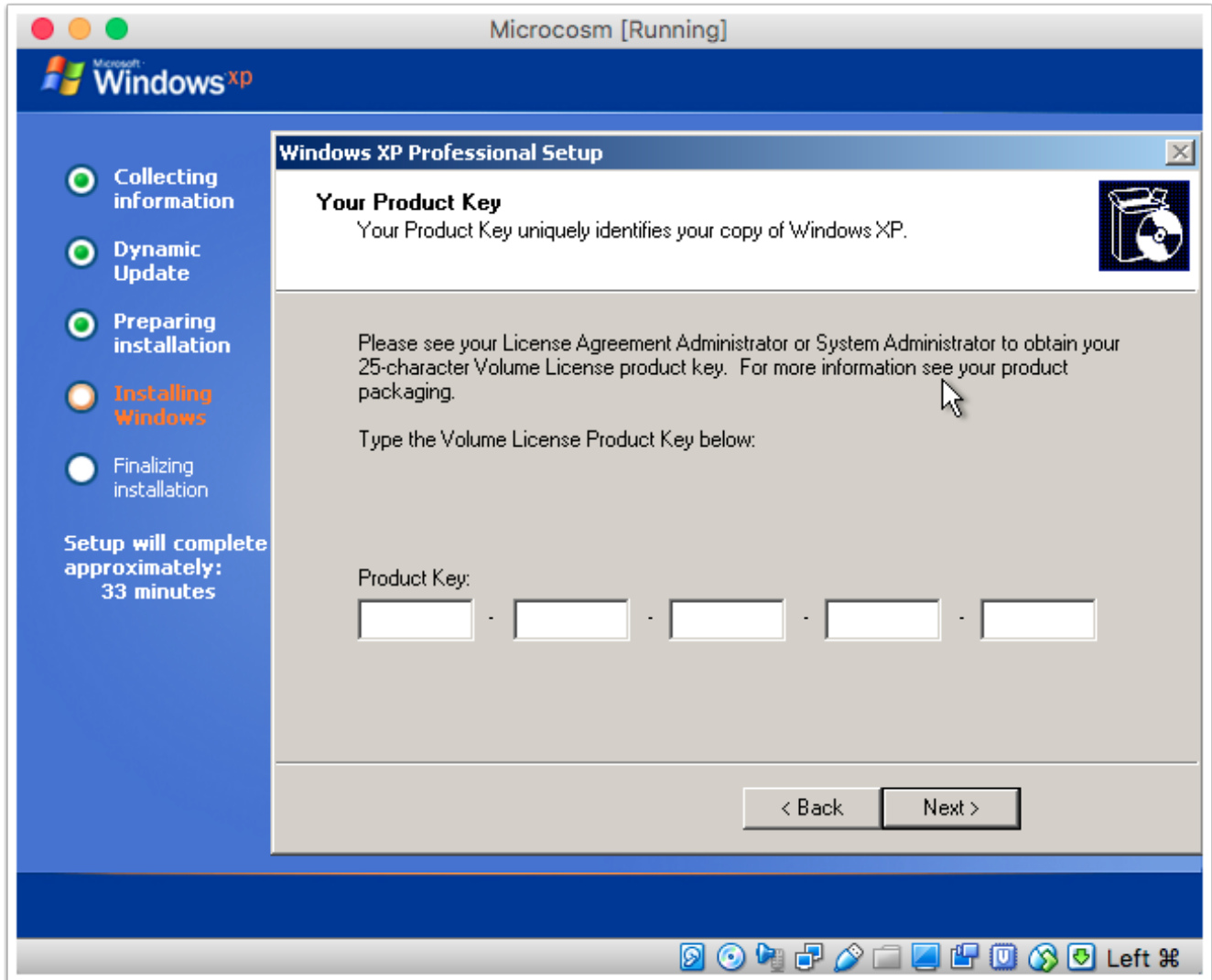


Add the User details.



# Creating A Virtual Machine for Microcosm

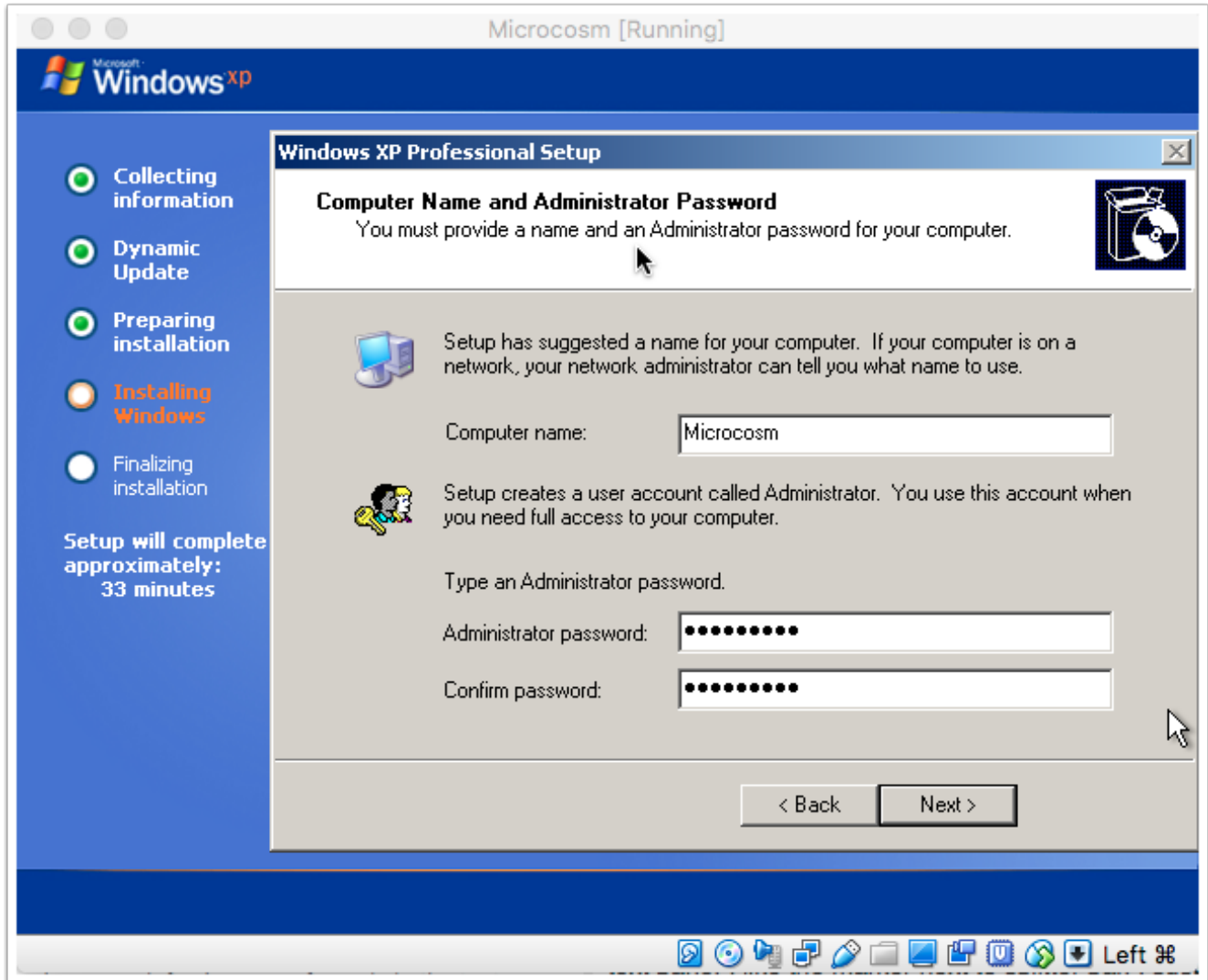
## 6.8 Adding the OS - 8



Enter the OS serial code

# Creating A Virtual Machine for Microcosm

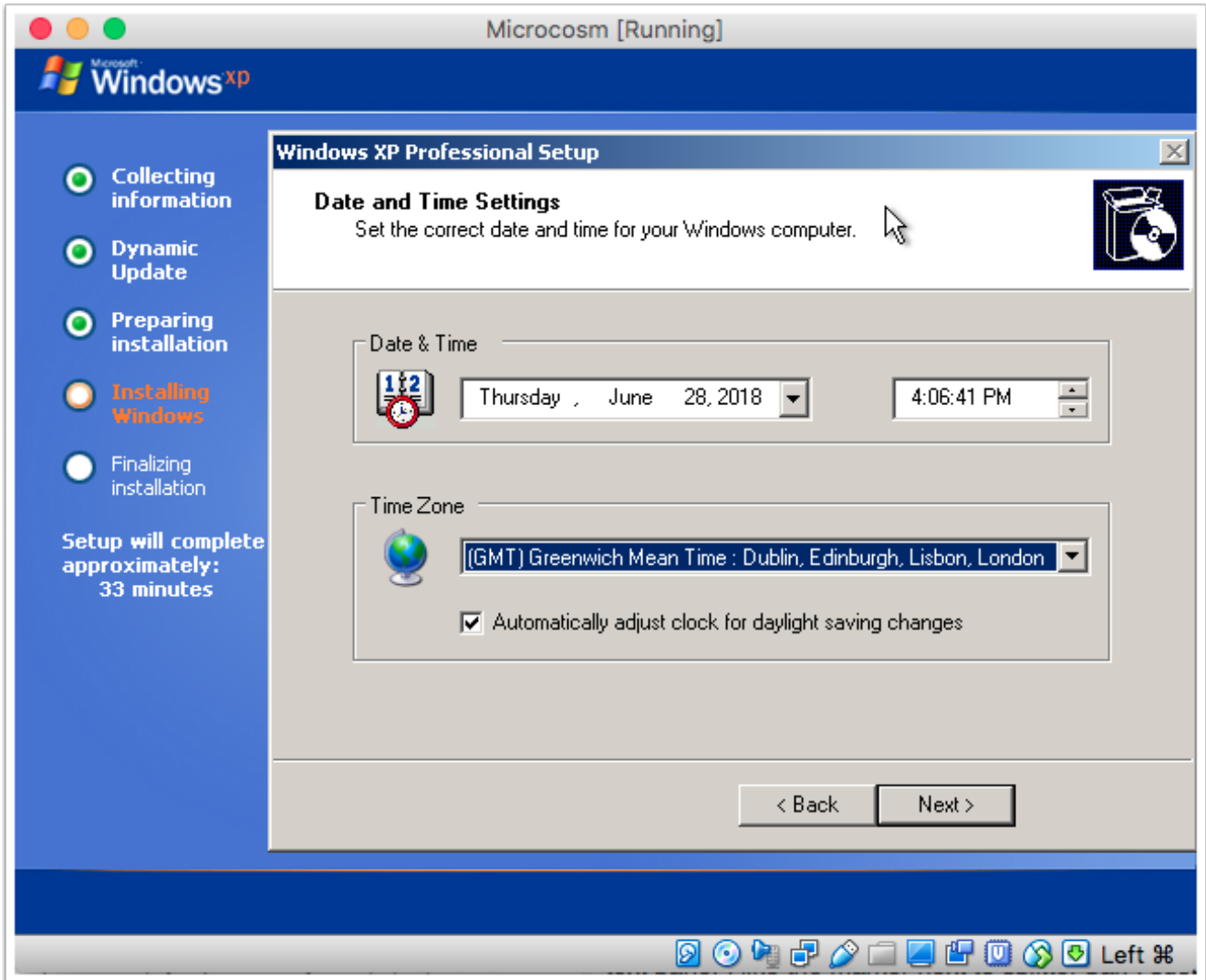
## 6.9 Adding the OS - 9



Name the computer and add admin password ('microcosm')

# Creating A Virtual Machine for Microcosm

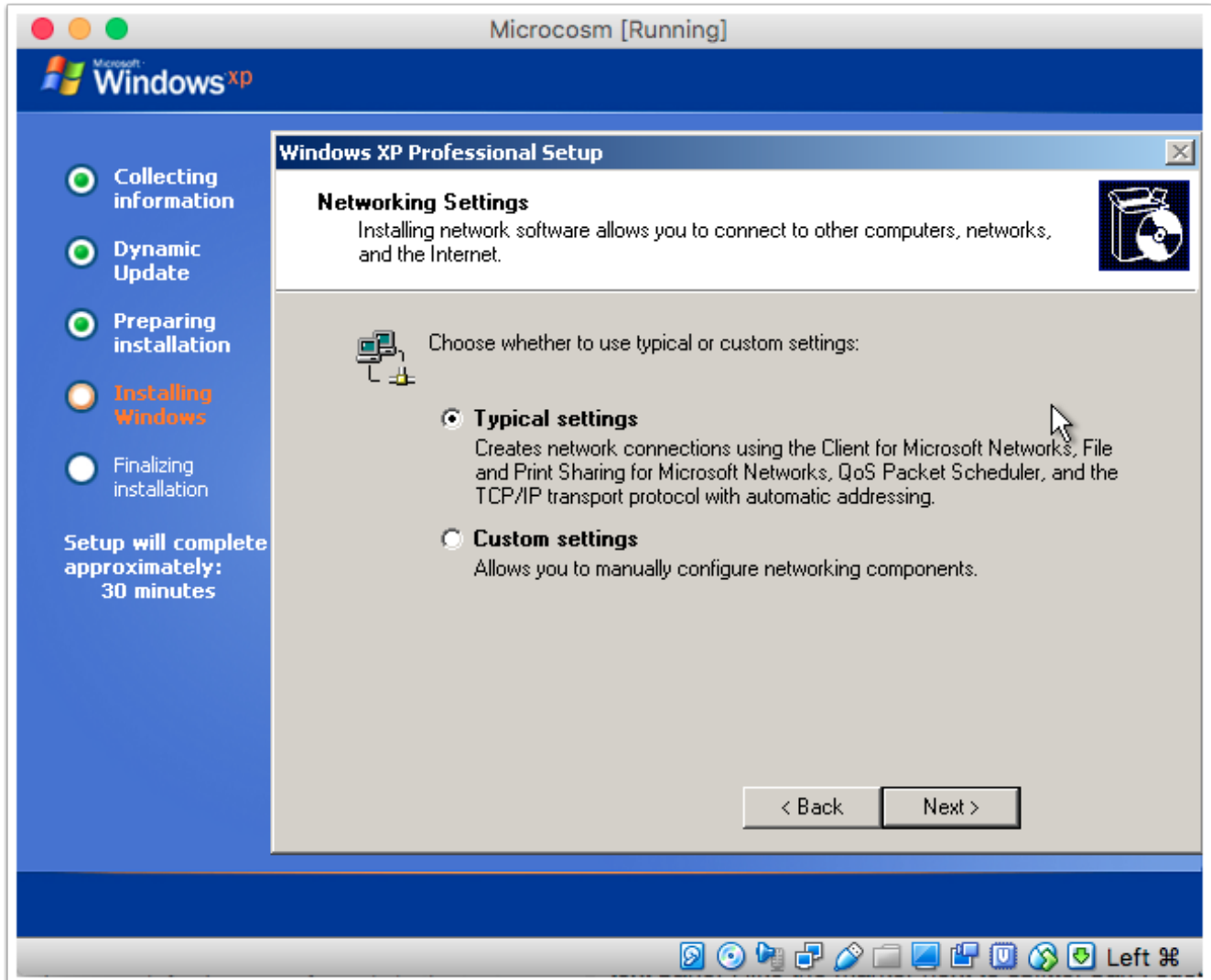
## 6.10 Adding the OS - 10



Check date/time and set GMT as time zone.

# Creating A Virtual Machine for Microcosm

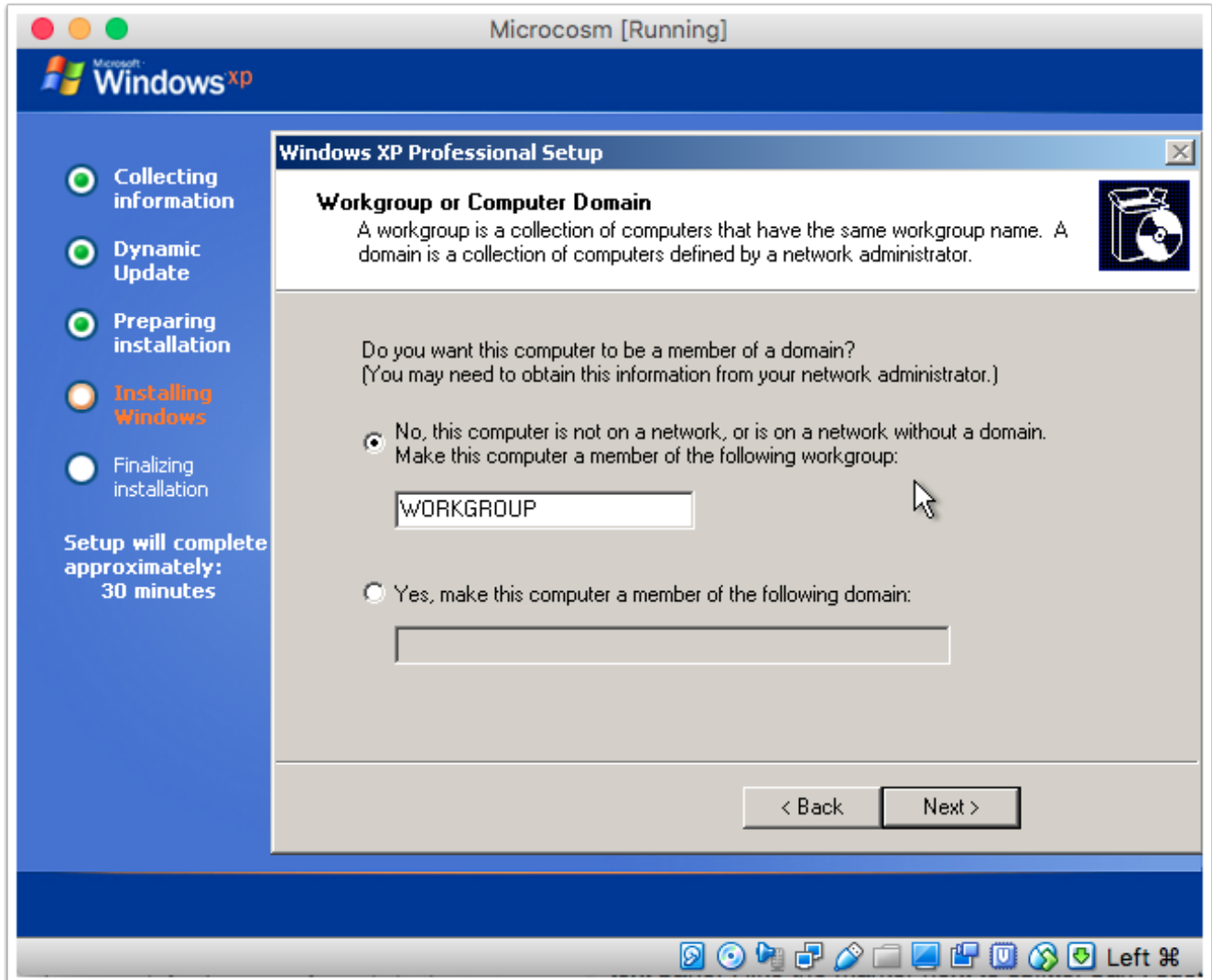
## 6.11 Adding the OS - 11



Accept setting. It is useful to have some networking set up so you can map local host drives for data transfer.

# Creating A Virtual Machine for Microcosm

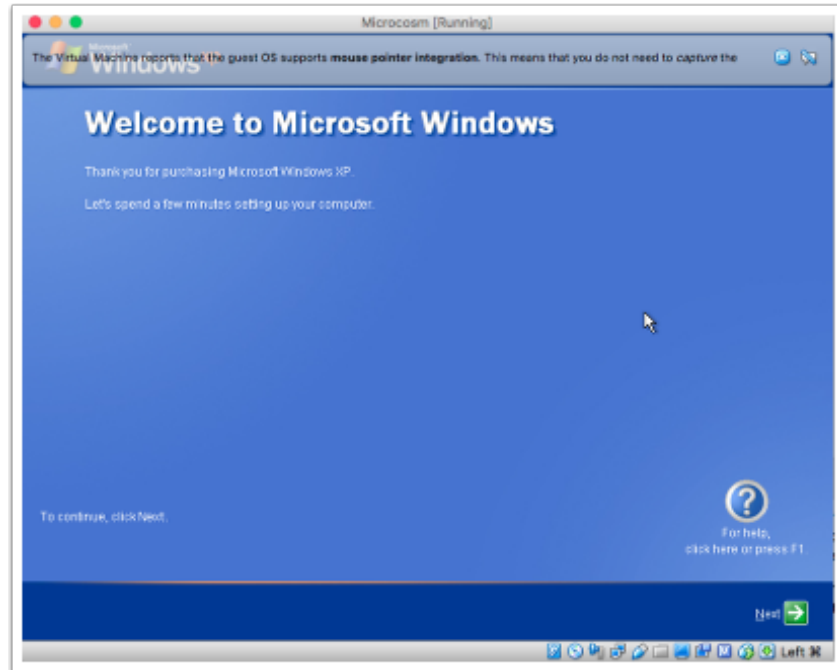
## 6.12 Adding the OS - 12



Accept defaults. On clicking **Next**, there is a large copy of files after which the new OS will reset the screen resolution and re-boot the OS (not the VM).

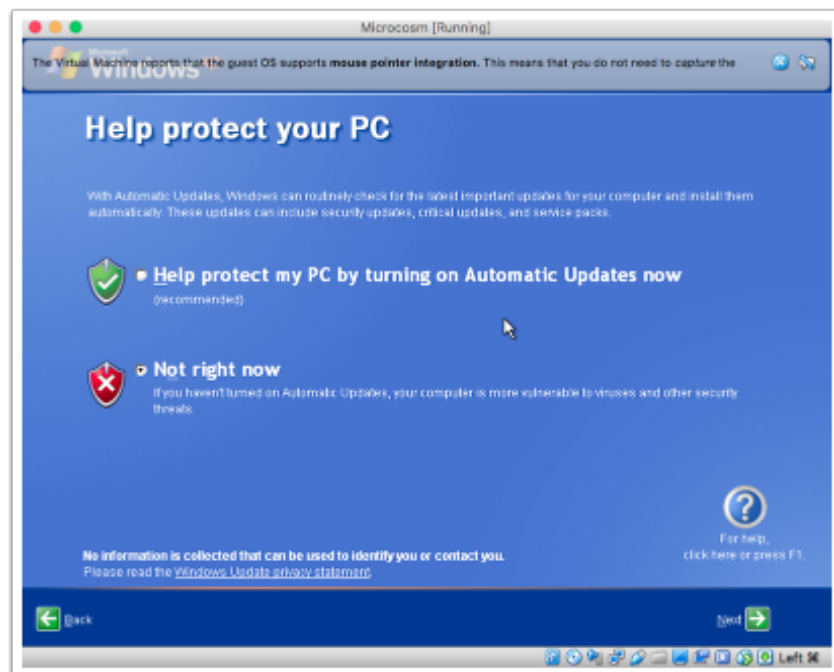
# Creating A Virtual Machine for Microcosm

## 6.13 Adding the OS - 13



Click the green Next button.

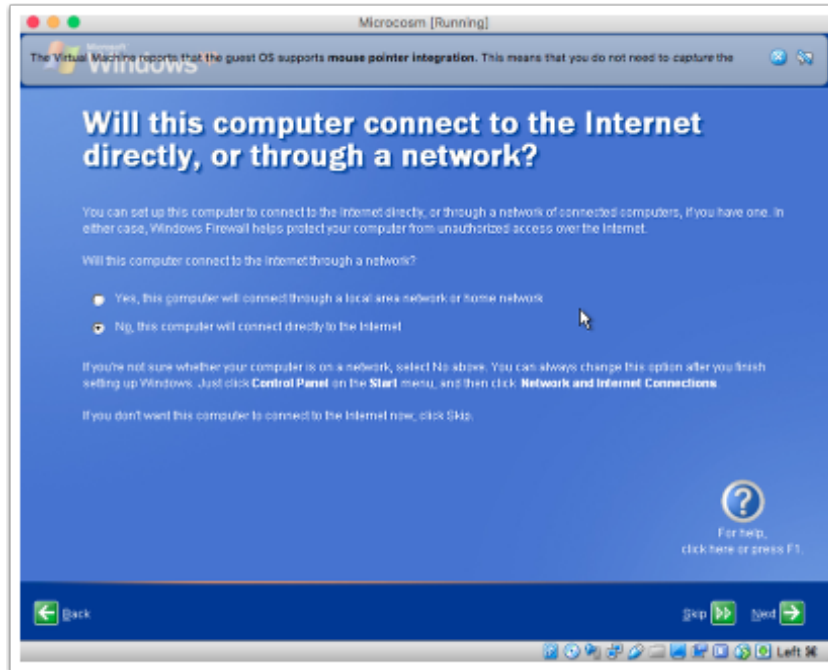
## 6.14 Adding the OS - 14



Select the Not right now option for Updates, then Next.

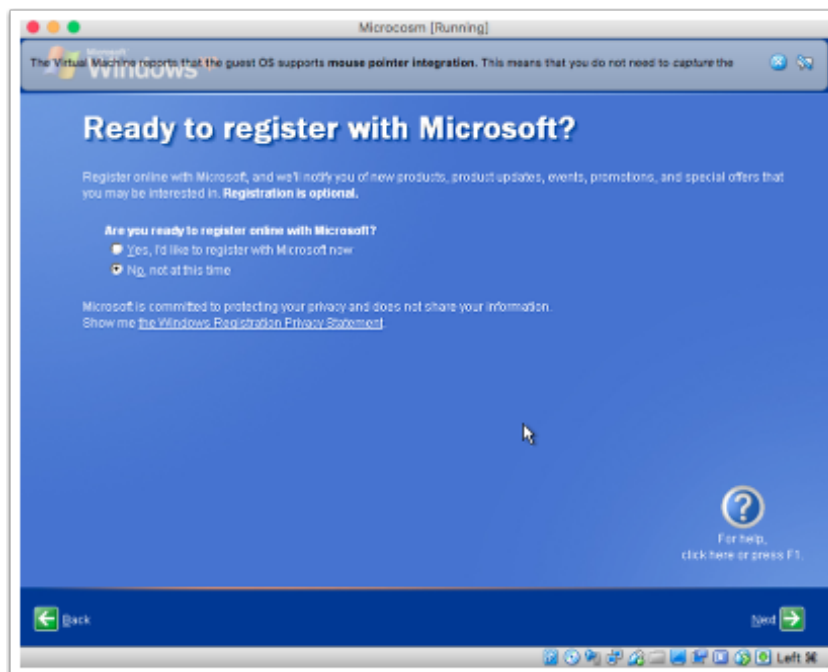
# Creating A Virtual Machine for Microcosm

## 6.15 Adding the OS - 15



Select the No option for Internet connection, the Next.

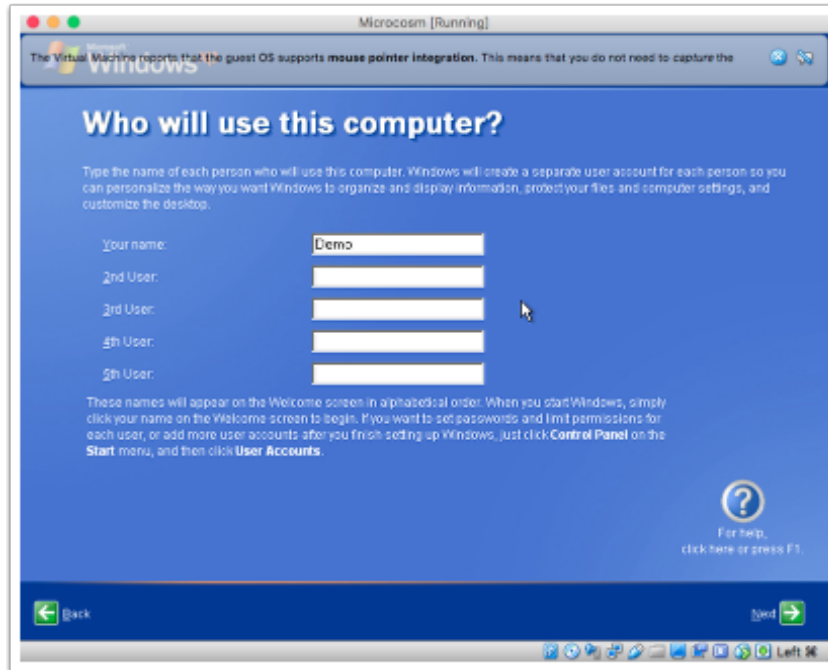
## 6.16 Adding the OS - 16



Select No, and then Next.

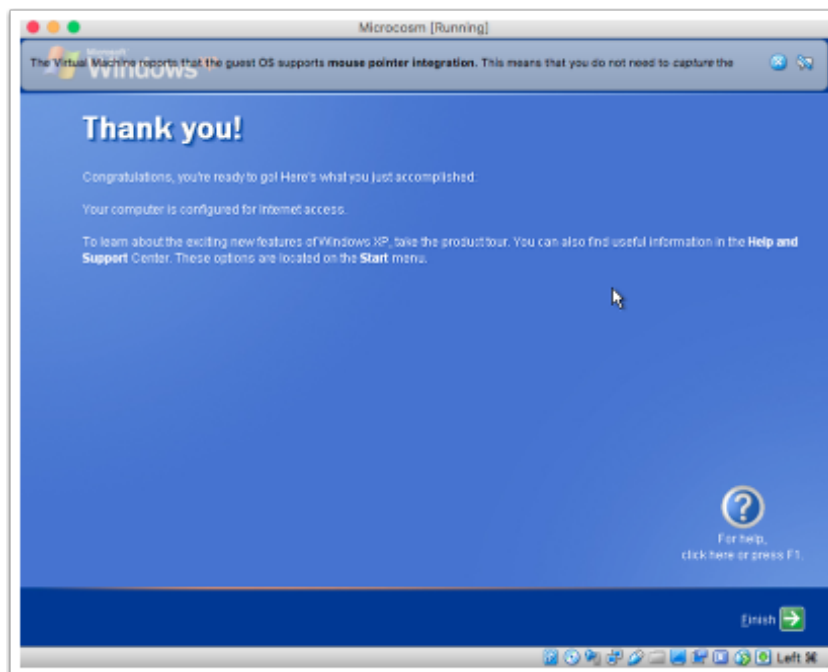
# Creating A Virtual Machine for Microcosm

## 6.17 Adding the OS - 17



Add a 'Demo' account unless you will just run as the admin account.

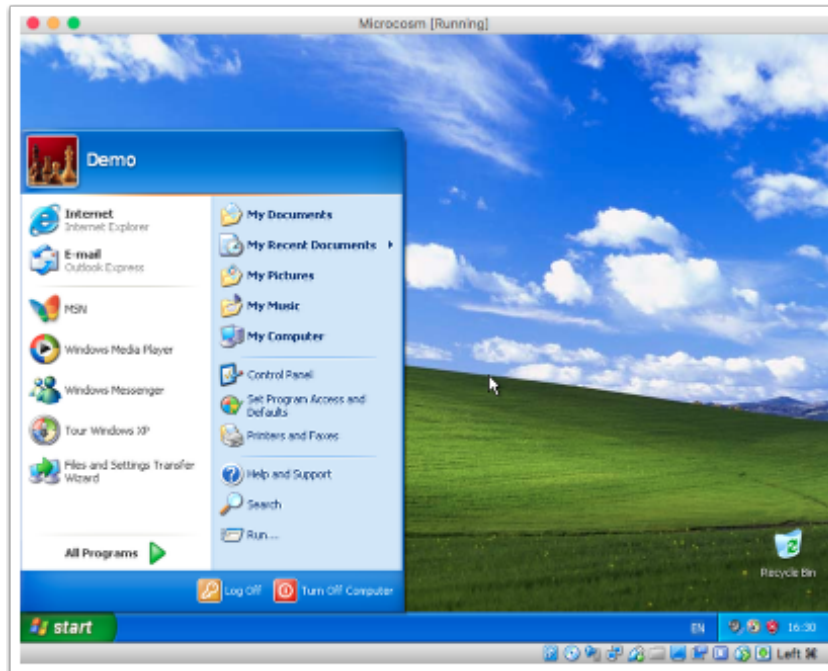
## 6.18 Adding the OS - 18



Setup is complete. The OS now opens up the default 'Demo' account.



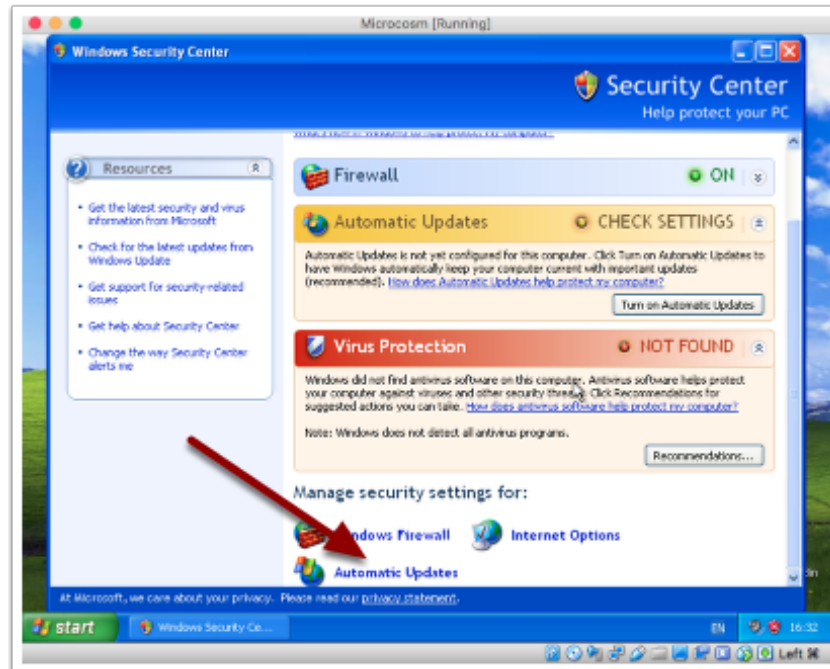
## 7. Opening the OS



The XP interface opens, booting straight into the default user account 'Demo', as defined whilst installing the OS. You can eject the Windows install CD. The screen resolution will be set to 800 x 600. this is maximum supported until you (below) add the 'Guest Additions' pack. That said, bear in mind 800 x 600 would have been a quite normal resolution at the time the app was first offered so gives a more authentic user experience. Also, hosted on modern computers with bigger screens it allows the VM to be viewed alongside documentation or the researchers note-taking tools.

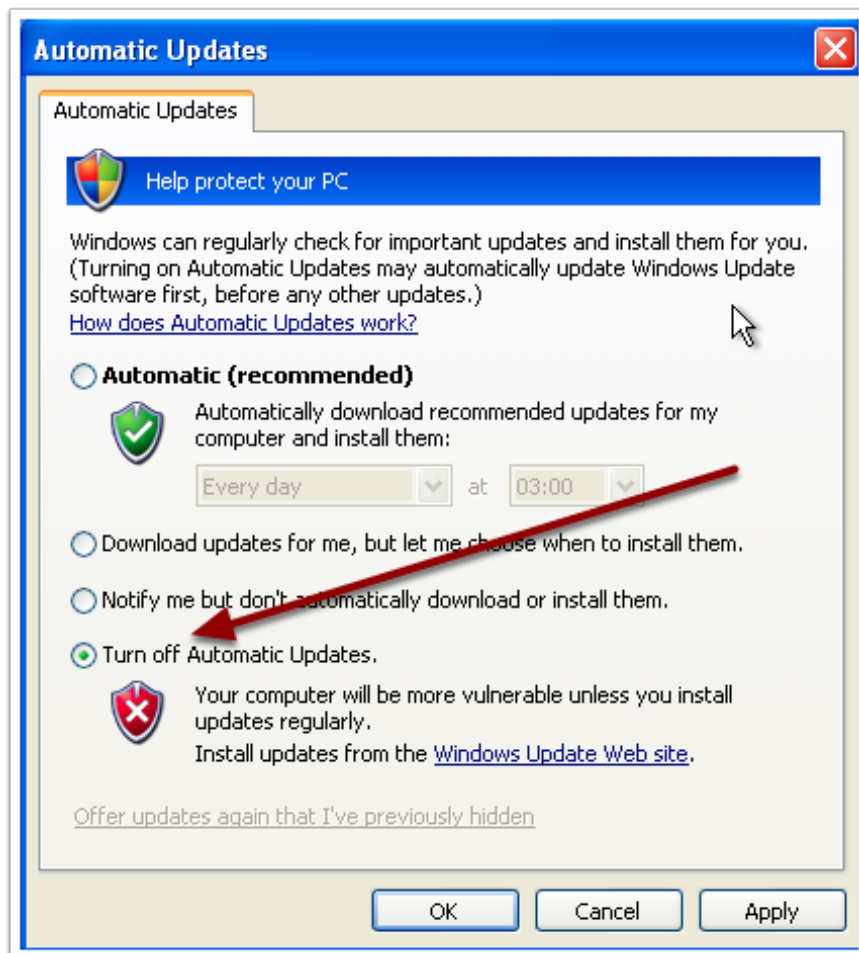
If shut down normally and the OS user accounts have not been tampered with, the VM should always boot straight into this account each time the

## 8. Turn off OS Updates - 1



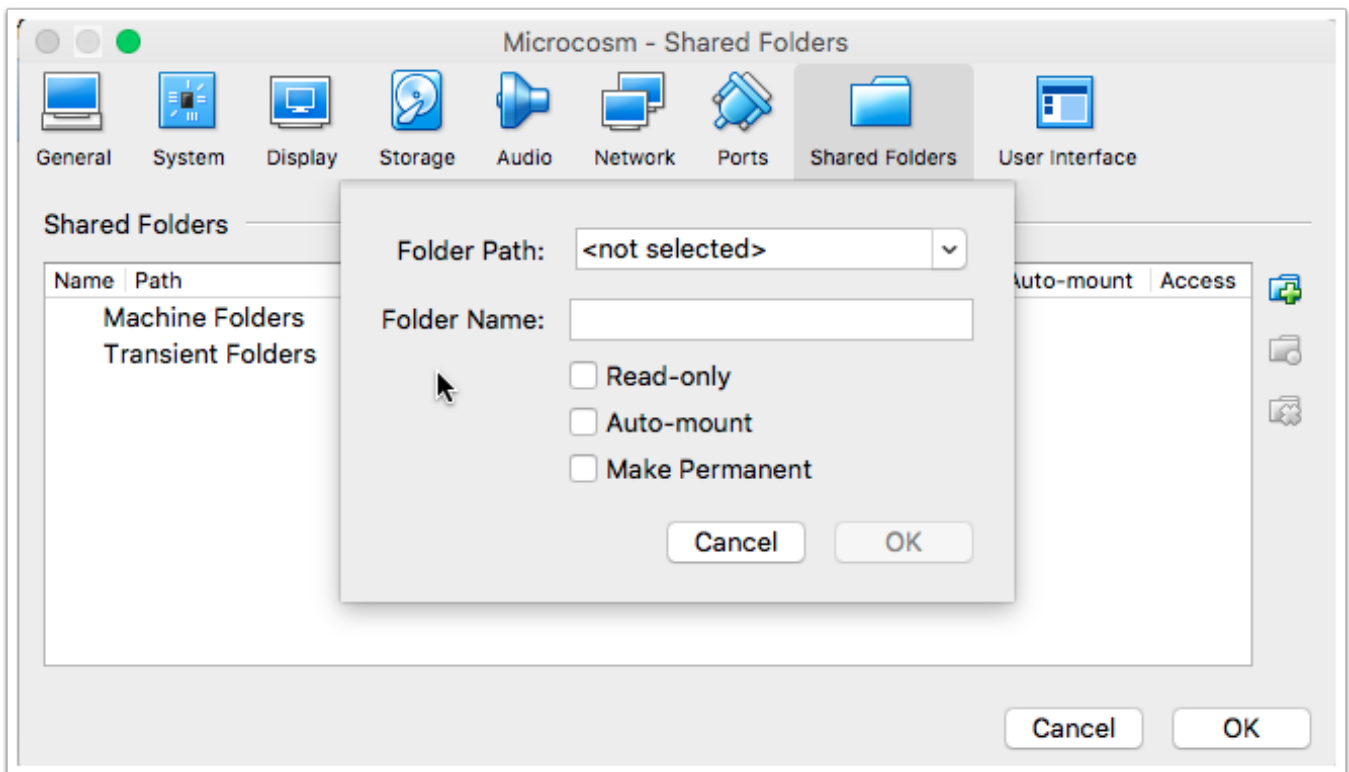
After opening, a system tray pop-up will open bottom right of screen. Click to open the Security Center, then scroll and click the **Automatic Updates** link.

## 9. Turn off OS Updates - 2



Select the Turn off Automatic Updates option and click OK, then close the Security Center window.

## 10. Sharing a Host Folder - 1



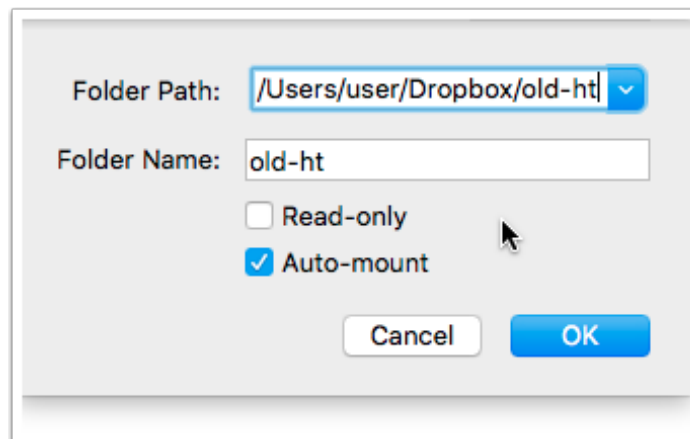
If desired, this feature should be set when the VM is closed down

To enable loading demo software (unless on CD, it can be useful to enable a shared folder - as in shared with the host computer.

Select the VM in the VirtualBox app (the VM can be running) and click the app's **Settings** toolbar button. From the Properties dialog, select the **Shared Folders** tab and then click the 'add' icon to the right of the folder listing box.

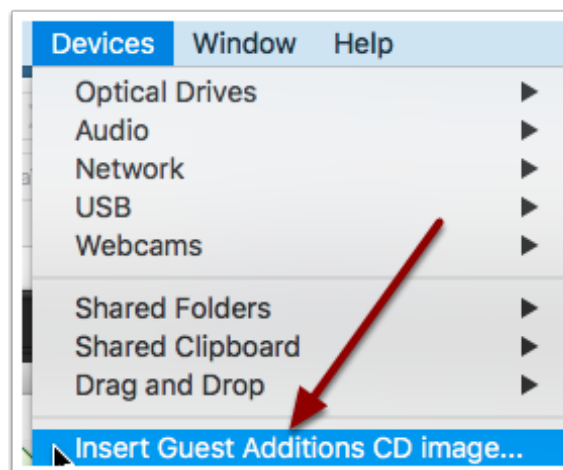
In the **Folder Path** pop-up select the **Other...** option, which opens the host OS's Finder (or Explorer if on Windows.)

## 11. Sharing a Host Folder - 2



The Folder Path is the host's path. The Folder Name defaults to the host folder name but can be customised to show a different title in the VM (note for XP use short names and no spaces). Once set-up these settings are re-editable via the properties of the folder which now appears on folder item in the Settings' Shared Folders tab.

## 12. Enabling Folder Sharing in the VM



In order for the VM to share host folders, an additional extension must be added. Use the **Devices** menu item, in the host computer's VirtualBox VM app menu and choose the item **Insert Guest Additions CD Image...**

# Creating A Virtual Machine for Microcosm

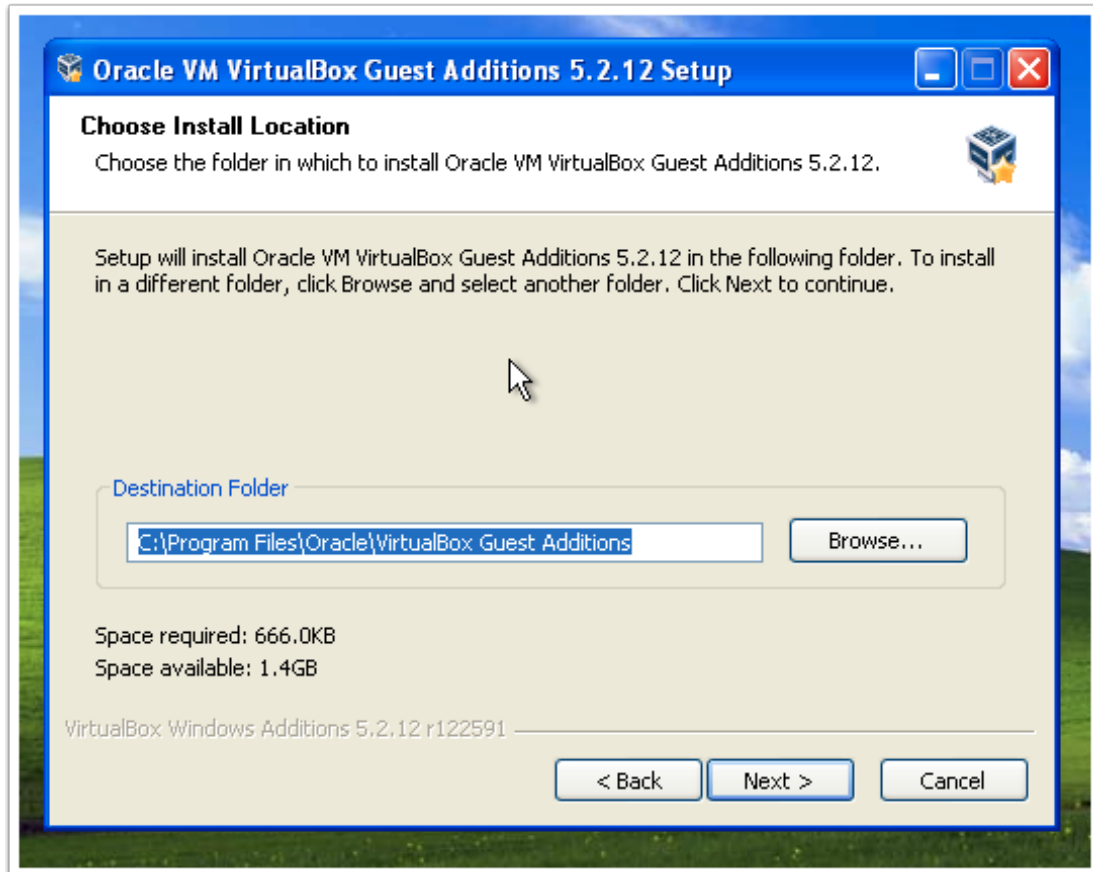
## 12.1 Installing Guest Additions - 1



The install process now runs in the VMn

# Creating A Virtual Machine for Microcosm

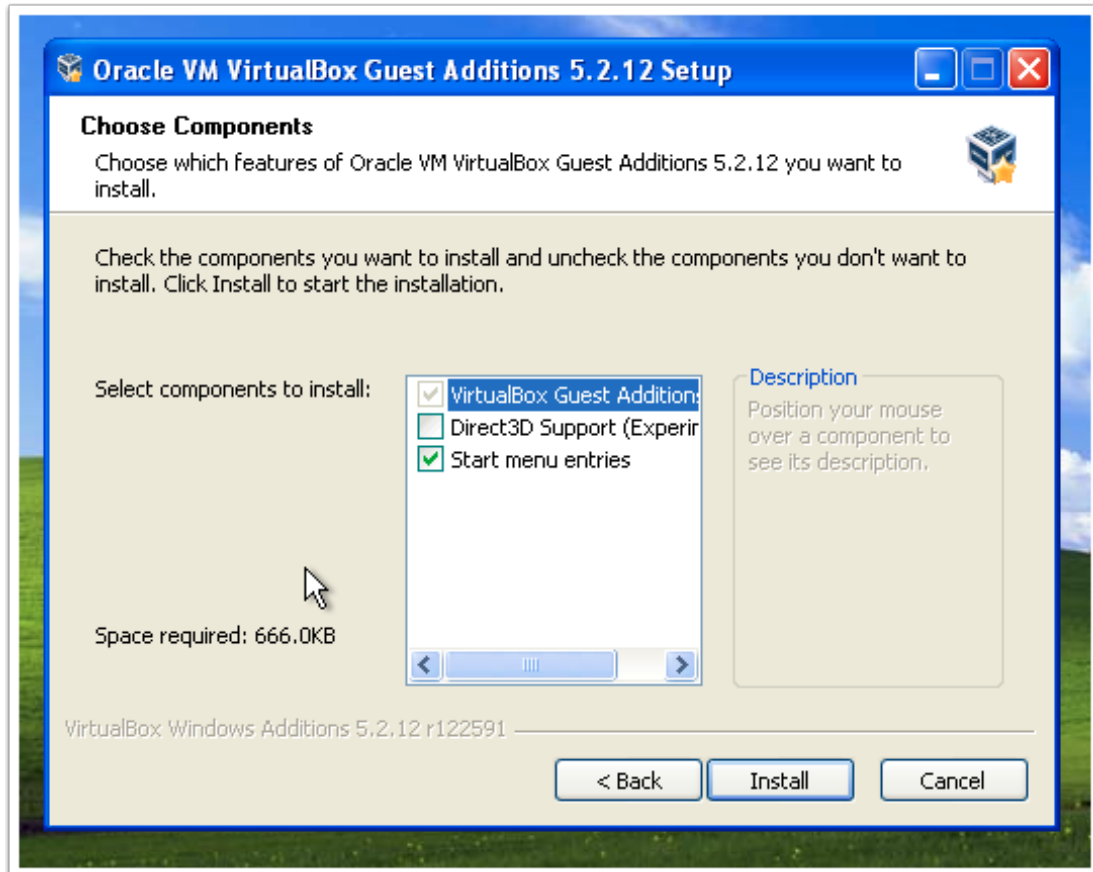
## 12.2 Installing Guest Additions - 2



Accept the default location. Click **Next**.

# Creating A Virtual Machine for Microcosm

## 12.3 Installing Guest Additions - 3

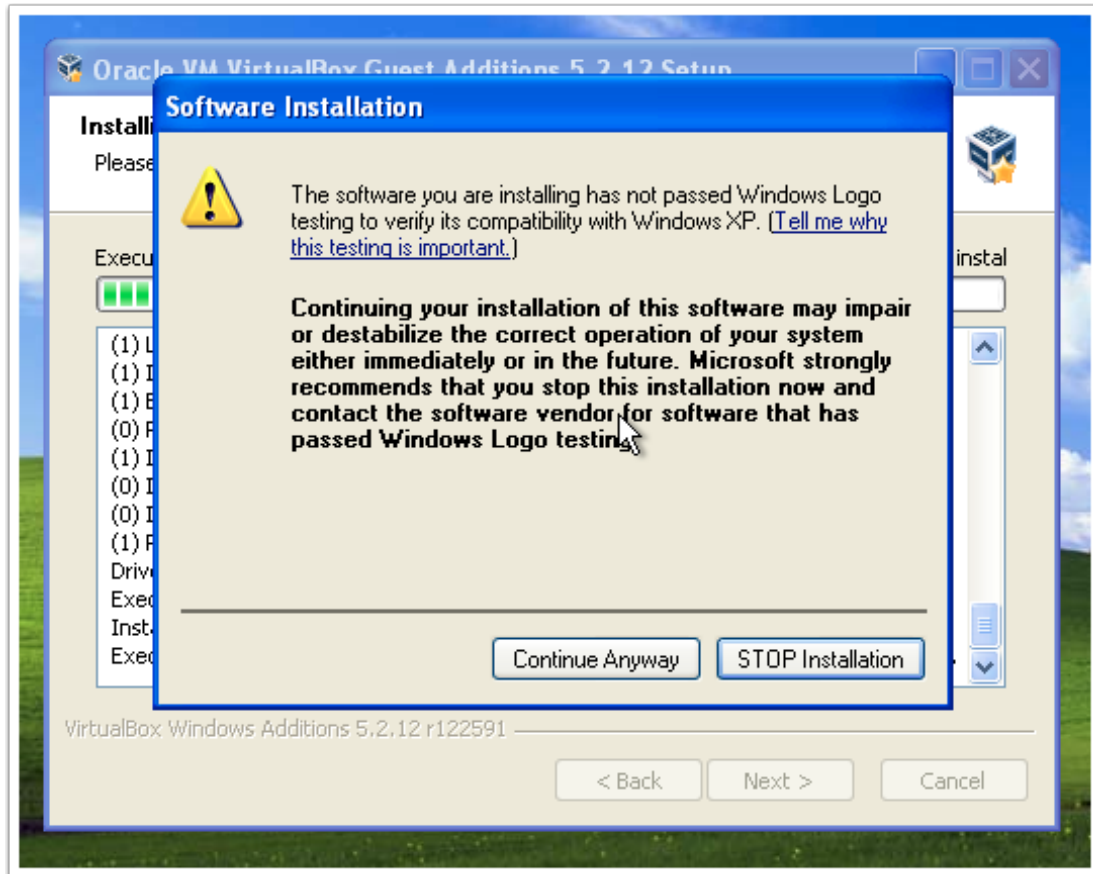


Accept the default settings. Click **Install**.



# Creating A Virtual Machine for Microcosm

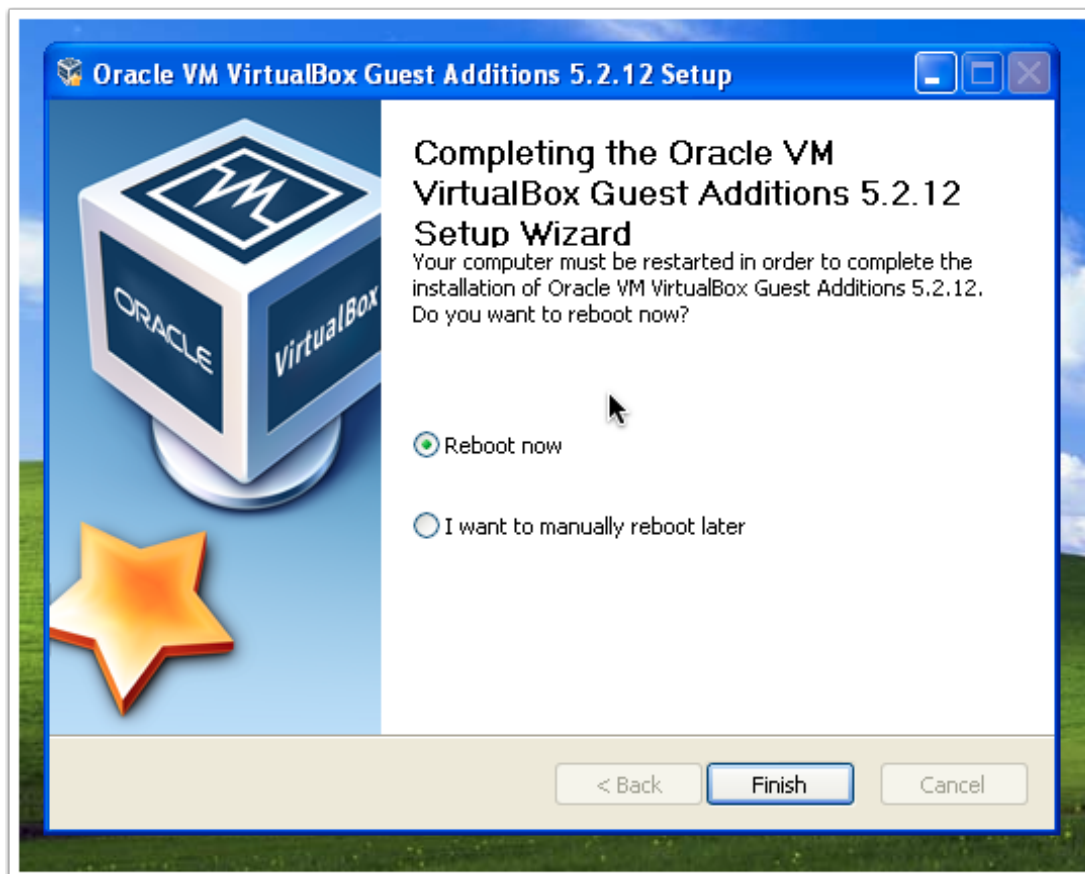
## 12.4 Installing Guest Additions - 4



Ignore this warning and click **Continue Anyway**. Ignore any similar warnings—there may be several—until the install completes.

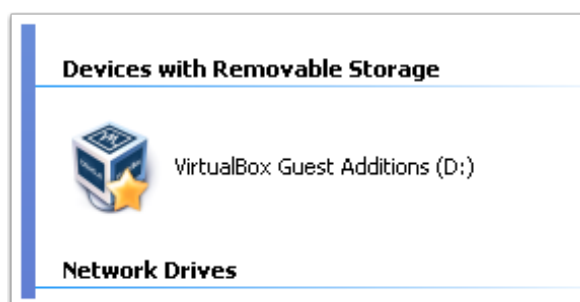
# Creating A Virtual Machine for Microcosm

## 12.5 Installing Guest Additions - 5



When the install completes, reboot the VM by clicking **Finish**.

## 12.6 Installing Guest Additions - 6



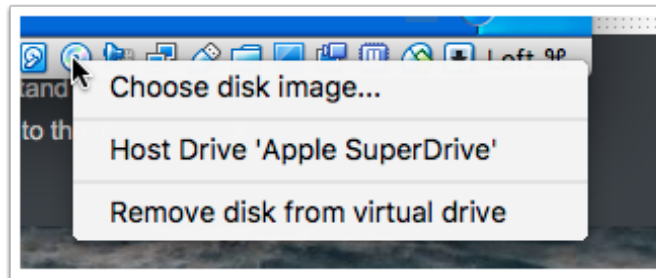
Once the re-boot completes, note that the CD drive shows as the Guest additions installer. use the VM's host OS app's Devices menu and reset the optical drive choice to the normal CD drive, which is now needed for Microcosm install. Notes:

- failing to do this step results in the D: drive in the XP VM showing as Guest Additions installer, which was just run.

# Creating A Virtual Machine for Microcosm

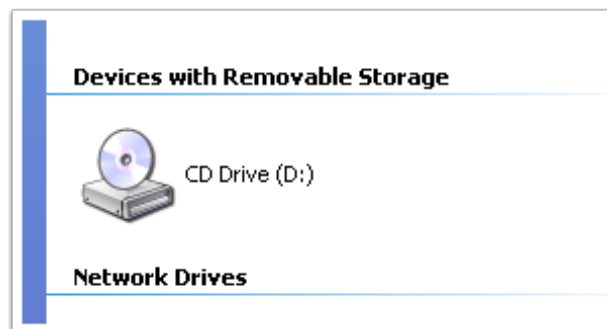
- whilst the CD is added to the VM, it may become unavailable in the host OS Finder/Explorer
- the additions install enables VM screen resolutions above 800 x 600.

## 12.7 Installing Guest Additions - 7



Click the CD icon (second from left) in the VM frame's lower toolbar. From the pop-up, click **Remove disk form virtual drive**. The D: drive icon will now change back to a generic CD drive icon. Click the **Host Drive 'Apple Super Drive'** to share the drive ready for the next install. The name of the CD drive in the pop-up will vary from computer to computer; if a Cd is currently mounted the listing may use the name of the CD.

## 12.8 Installing Guest Additions - 8



After un-mounting the Guest Additions ISO, the CD drive shows a normal drive icon.

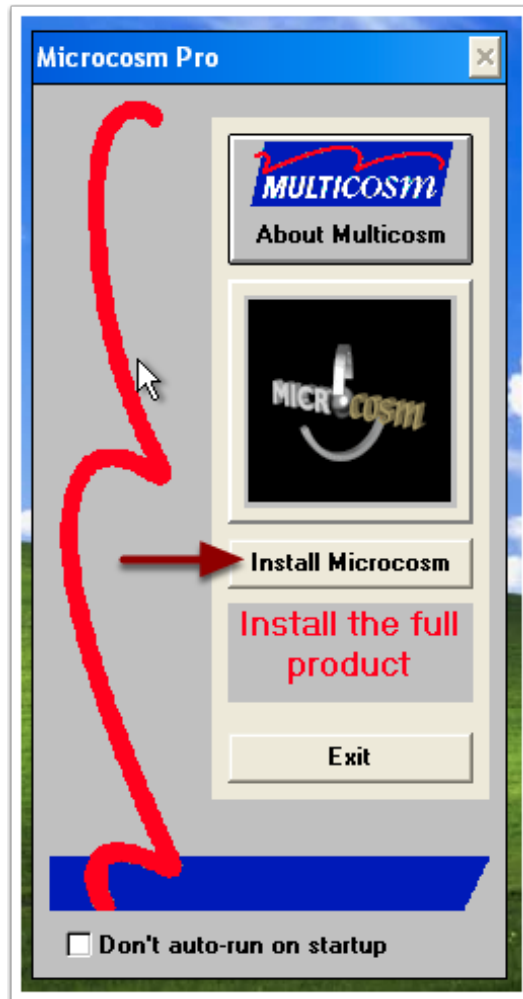
Further notes:

- failing to do this step results in the D: drive in the XP VM showing as Guest Additions installer, which was just run.
- the VM can be closed with the GuestAdditions ISO mounted but if the VM is imported in that state is may fail to import on another computer that has the GuestAdditions extension as UUID clash is generated.
- whilst the CD is added to the VM, it may become unavailable in the host OS Finder/Explorer
- the additions install enables VM screen resolutions above 800 x 600.

## 13. Installing Microcosm

Make sure you have the Microcosm serial number to hand as this is needed to complete install.

### 13.1 Installing Microcosm - 1

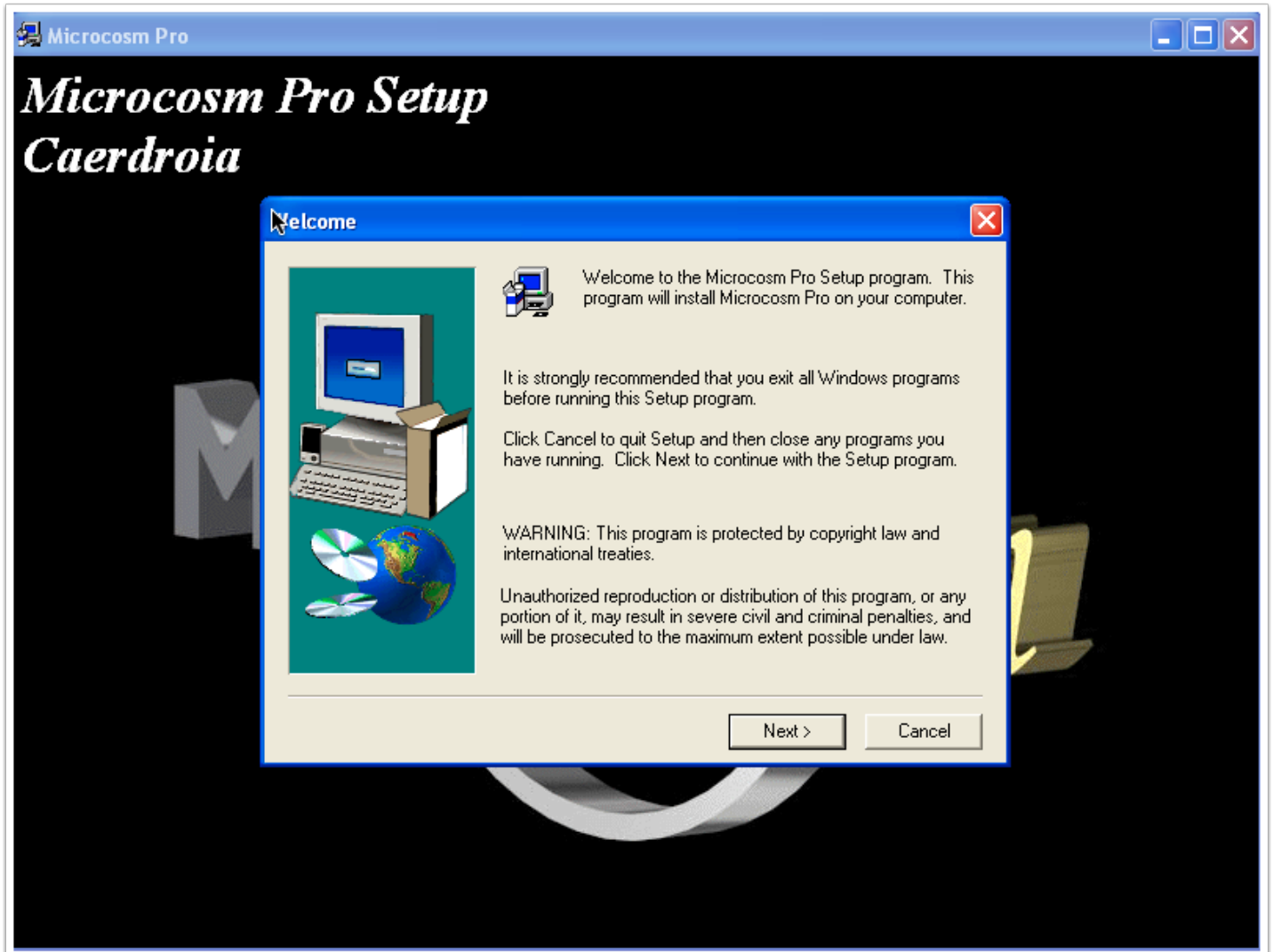


On inserting the Microcosm CD, the autorun should play and show the install applet. Click the **Install Microcosm** button to start the install.

Note: 'Multicosm' was a later branding used by the company who sold Microcosm. The button only opens defunct contact details. Be aware that the [multicosm.com](http://multicosm.com) domain now returns a web page giving a malware warning so the domain is likely not now owned by a legitimate business.

# Creating A Virtual Machine for Microcosm

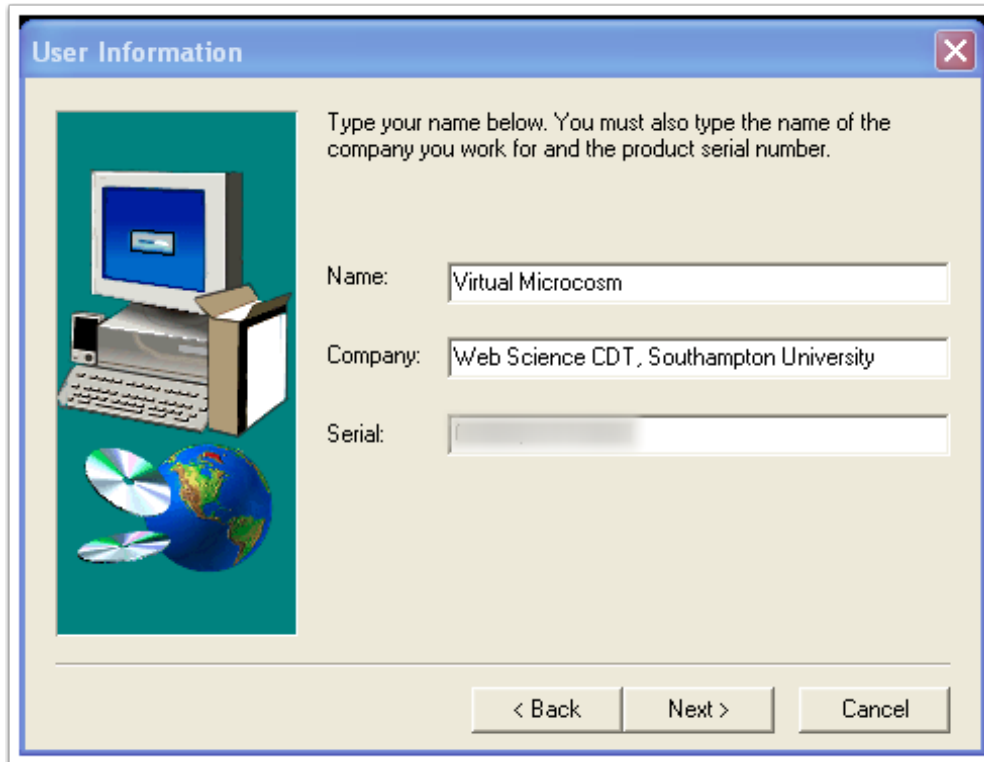
## 13.2 Installing Microcosm - 2



The installer opens. Click Next.

# Creating A Virtual Machine for Microcosm

## 13.3 Installing Microcosm - 3

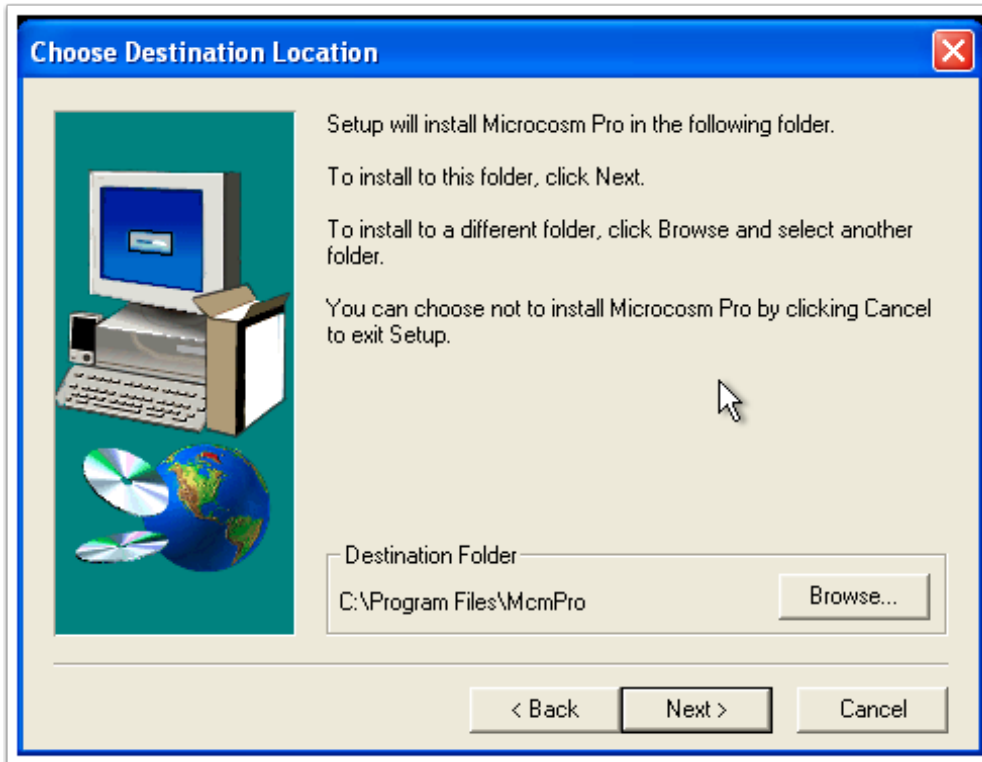


The first two boxes pre-populate with data from the OS registration added during OS install (but can be changed).

Enter the Microcosm serial code in the third box. Assume the code is case-sensitive and enter it using the case given (the input box allows both upper & lower case input).

# Creating A Virtual Machine for Microcosm

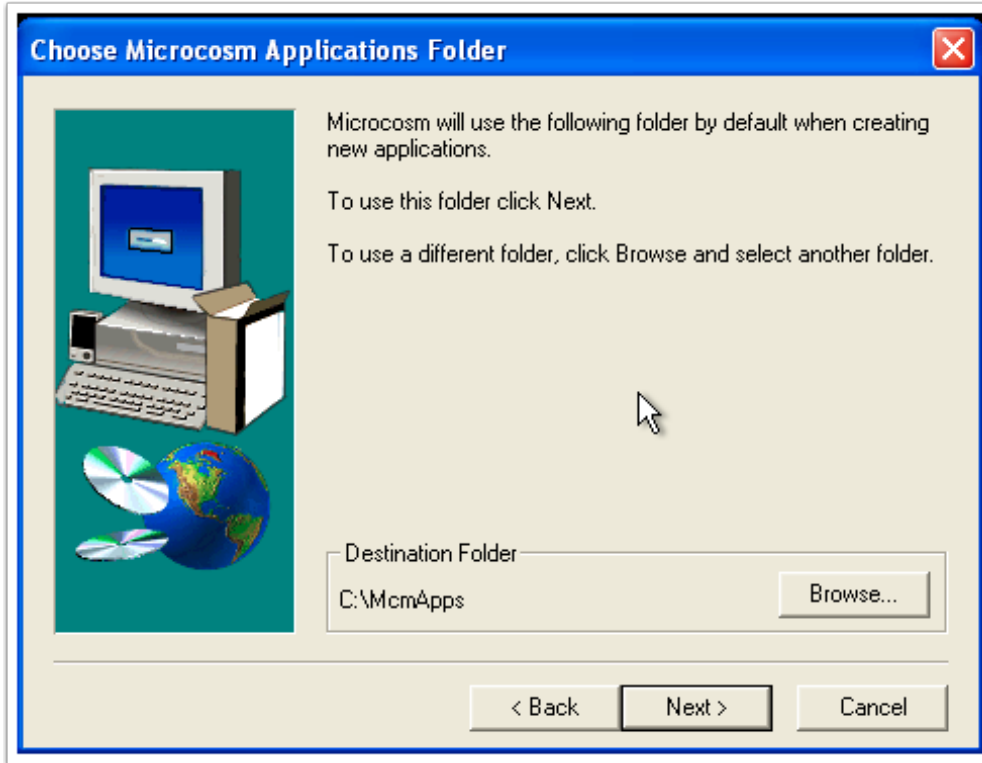
## 13.4 Installing Microcosm - 4



Accept the default location. Click **Next**

# Creating A Virtual Machine for Microcosm

## 13.5 Installing Microcosm - 5

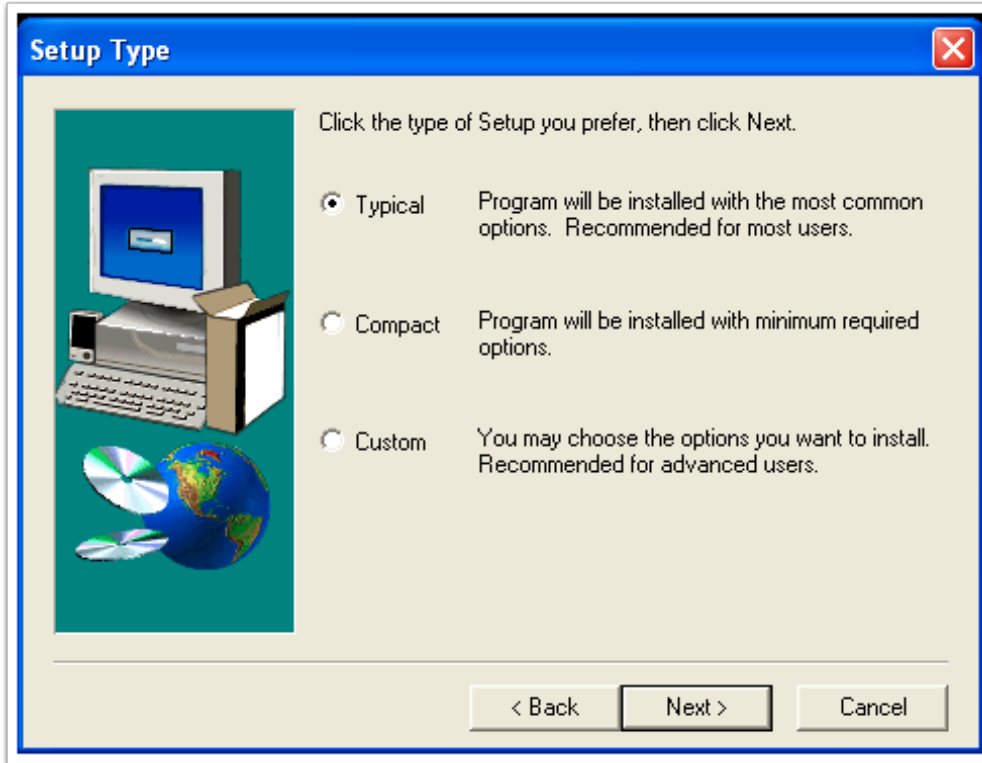


Accept the default location. Click **Next**



# Creating A Virtual Machine for Microcosm

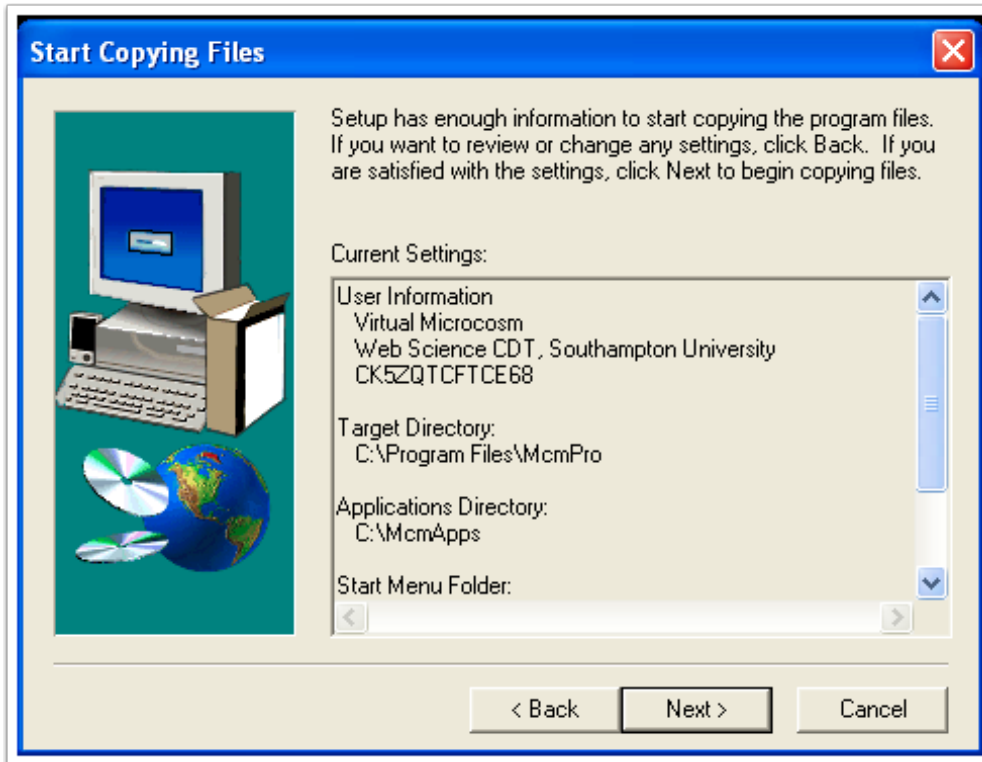
## 13.6 Installing Microcosm - 6



Accept the default choice of install type: **Typical**. Click **Next**.

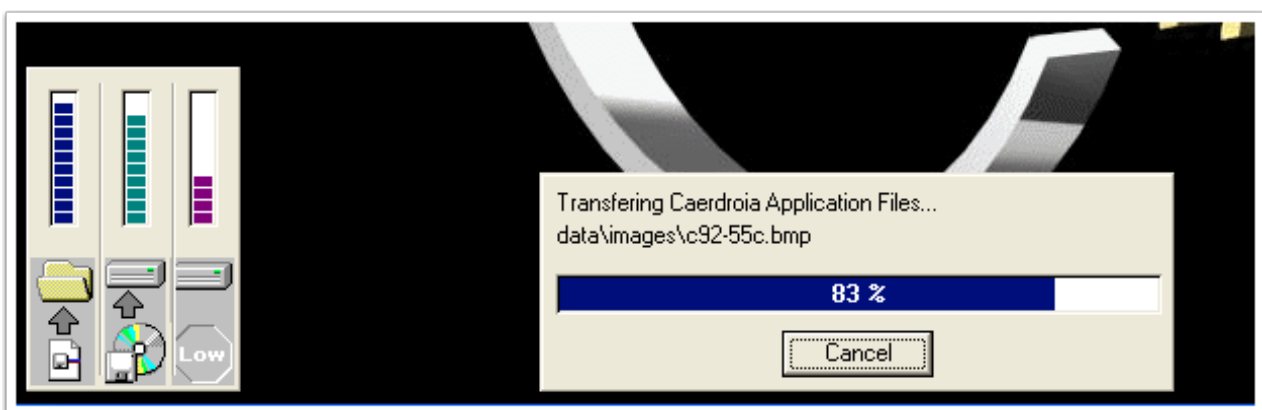
# Creating A Virtual Machine for Microcosm

## 13.7 Installing Microcosm - 7



Summary panel. Click Next.

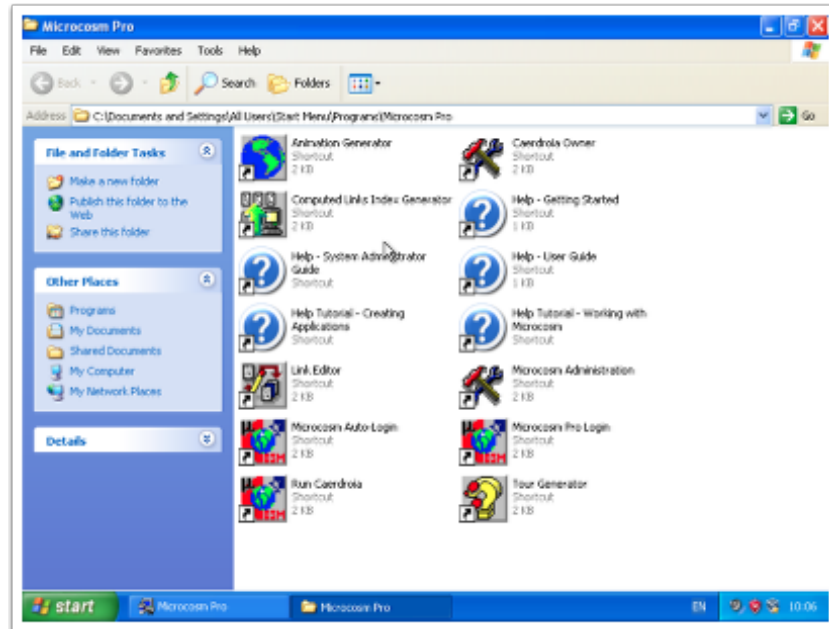
## 13.8 Installing Microcosm - 8



The installer runs.

# Creating A Virtual Machine for Microcosm

## 13.9 Installing Microcosm - 9



The process completes to show a folder the Microcosm app's various program shortcuts. The folder is full screen. Minimise it to reveal the install window...

# Creating A Virtual Machine for Microcosm

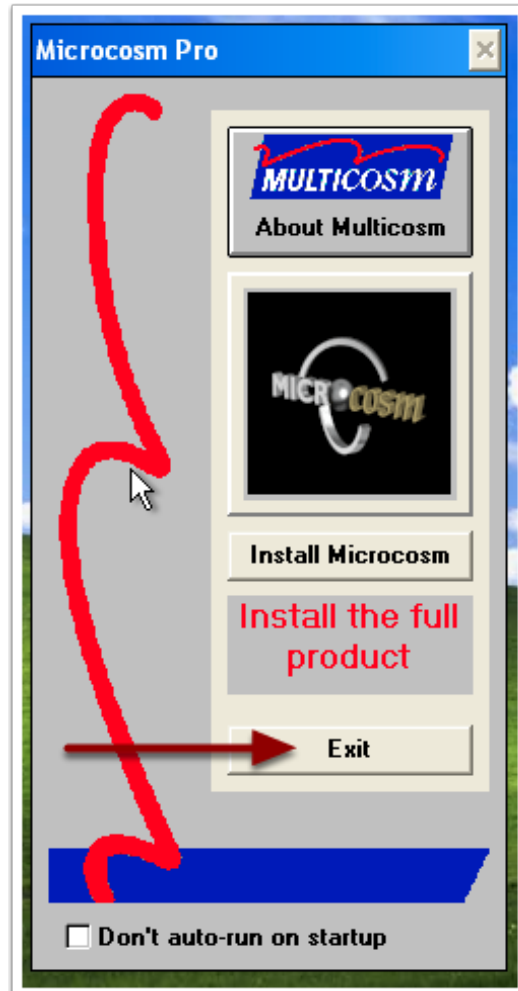
## 13.10 Installing Microcosm - 10



Click Finish to complete the install and close the installer window.

# Creating A Virtual Machine for Microcosm

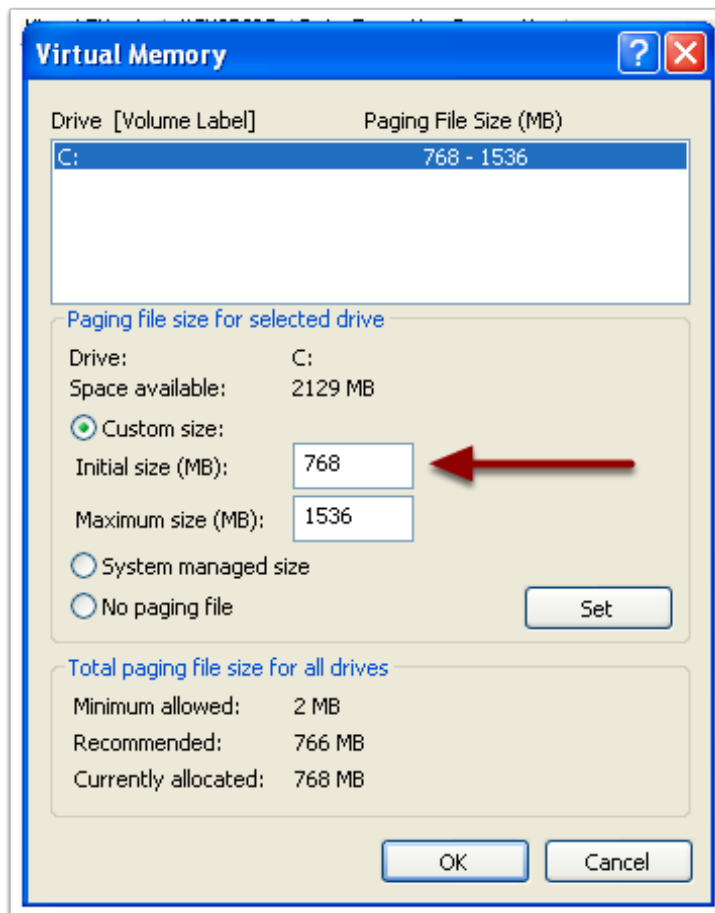
## 13.11 Installing Microcosm - 11



Click the Exit button to close the Autorun window. The Microcosm CD is no longer required and can be safely stored away (with the serial number!). If the CD drive is not needed for other installs it can be unmounted from the VM and returned to host system control. It is suggested any CDs be eject *before* switching control. Experience with a USB CD drive on a Mac showed that on returning control from VM to host OS that the CD drive was not re-detected (un-/re-plug the drive to fix this).

Note: the CD does contain a root-level folder 'docs' which contains PDF version of the app's documentation \*which is also (mostly - all?) in the app's Help files. The folder also contains a copy of Acrobat Reader v3.02 which could be installed to allow PDF use in the VM. Alternatively, the PDFs can be used on the host system which likely has built-in PDF support and larger resolution screen allowing the documentation to viewed alongside the running app.

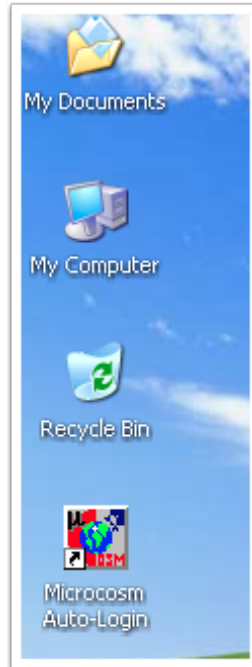
## 14. VM Virtual RAM and Swap File Size



Be aware that Windows defaults to setting default Windows pagefile size at x1.5 the amount of RAM. The VM hard drive's reported free space does allow for the pagefile. If your choice of virtual RAM size results too little virtual disk space then if the disk can't be increased (e.g. 4GB file size limit on (host) FAT 32 partitions) consider lowering the page file size.

To open the Virtual Memory dialog, in the VM use the Control Panel, System link, System Properties dialog Advanced tab, Performance section Settings button, Performance Options dialog, Advanced tab, Virtual memory section Change button.

## 15. Additional Content

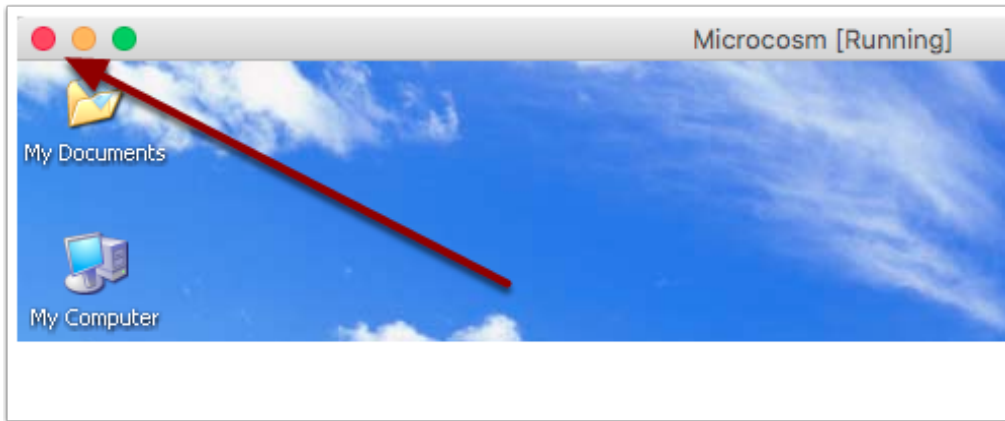


The Microcosm app and specimen content is now complete, but you may choose at this point to add any related data for use in the VM, especially whilst/if shared host folders are still mapped.

To help new users of the VM, it is useful to copy the shortcut **Microcosm Auto-Login** to the VM's Windows desktop. The short cut is to be found in the program shortcuts folder for microcosm.

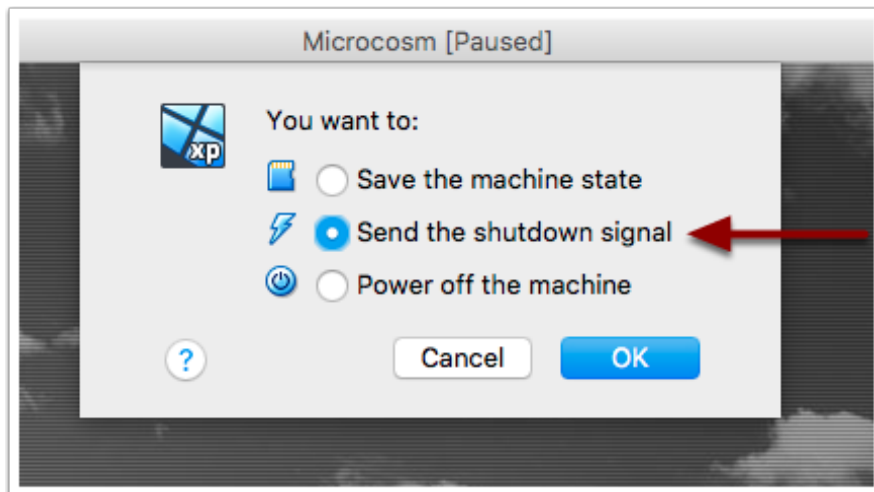
Note that if distributing the VM to others, you *may* be require to add disclosure/copyright notes. It may also prove prudent to use the admin account to lock down the VM OS to turn off features the user might not need. That said, if the VM OS is tampered with, opening a fresh copy of the VM will start the VM in intended state. It is worth keeping a master copy and letting user work on copies to ensure safe rollback in case the demo is damaged in use.

## 16. Correctly Close The VM - 1



Do not close the VM using the normal shut-down for the VM's OS. Instead, close any running apps as you would for shut-down and then close the VM window in the host OS, which results in a drop-down pane...

## 17. Correctly Close The VM - 2



Select option #2 Send the shutdown signal and click OK. VirtualBox will close down the VM and close the host VM window.

## 18. VM Transfer Method #1 - Export/Import of VM

In this method the VM is exported as a single 'OVA' archive to imported into VirtualBox on another PC. Apart from there being a single file for storage transfer, compression is applied helping with data

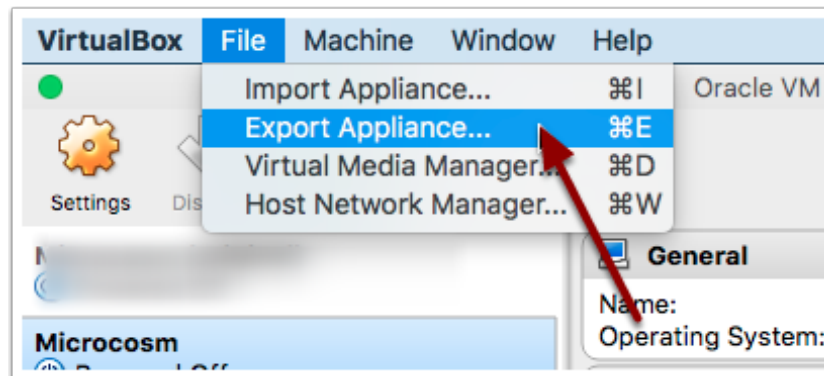


# Creating A Virtual Machine for Microcosm

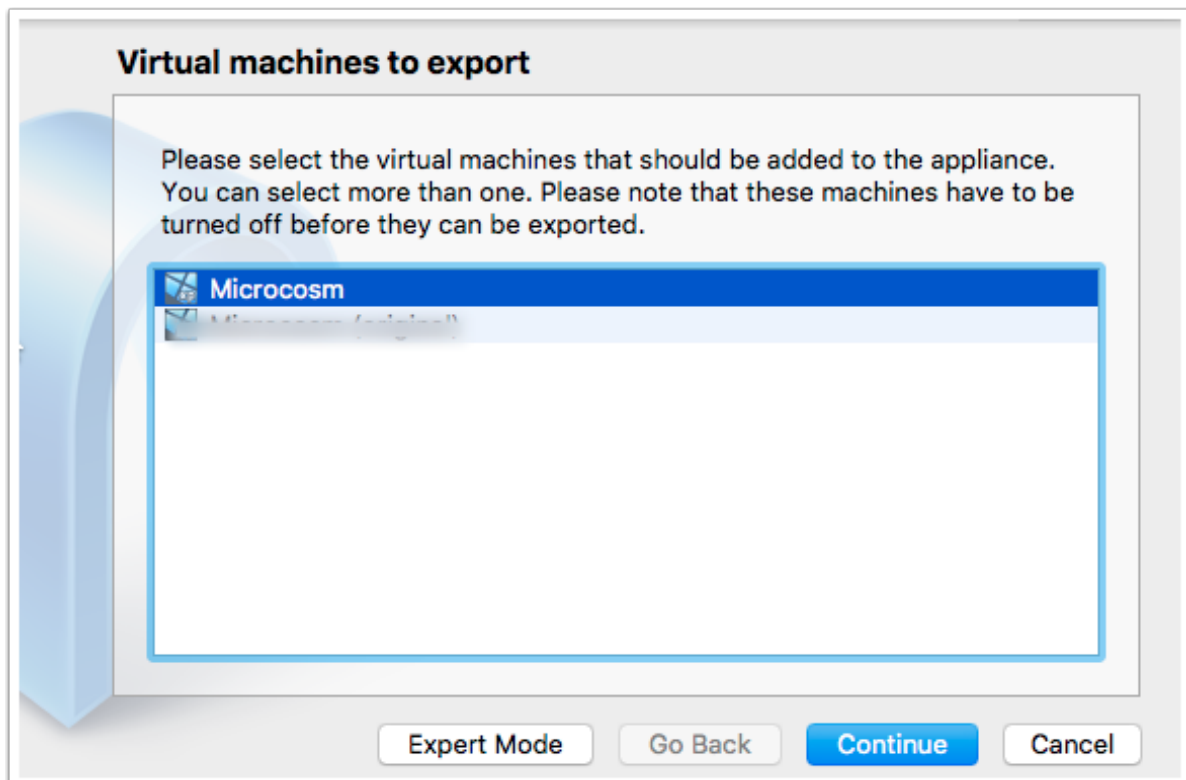
transfer especially across the Internet. In this scenario the 3.23 GB folder of files for this VM compresses to a single 538 MB file

## 18.1 Exporting a VM archive - 1

Use VirtualBox File menu, Export Appliance...



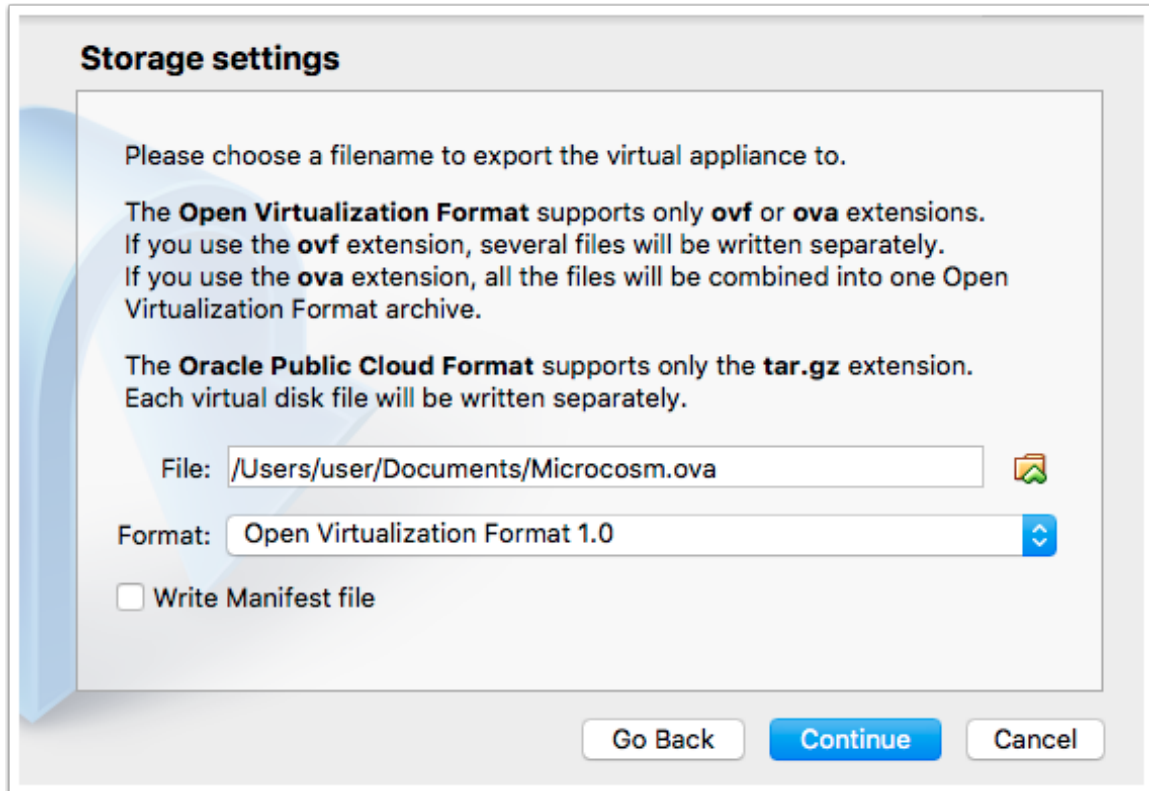
## 18.2 Exporting a VM archive - 2



Select the desired VM to export and click **Continue**.

# Creating A Virtual Machine for Microcosm

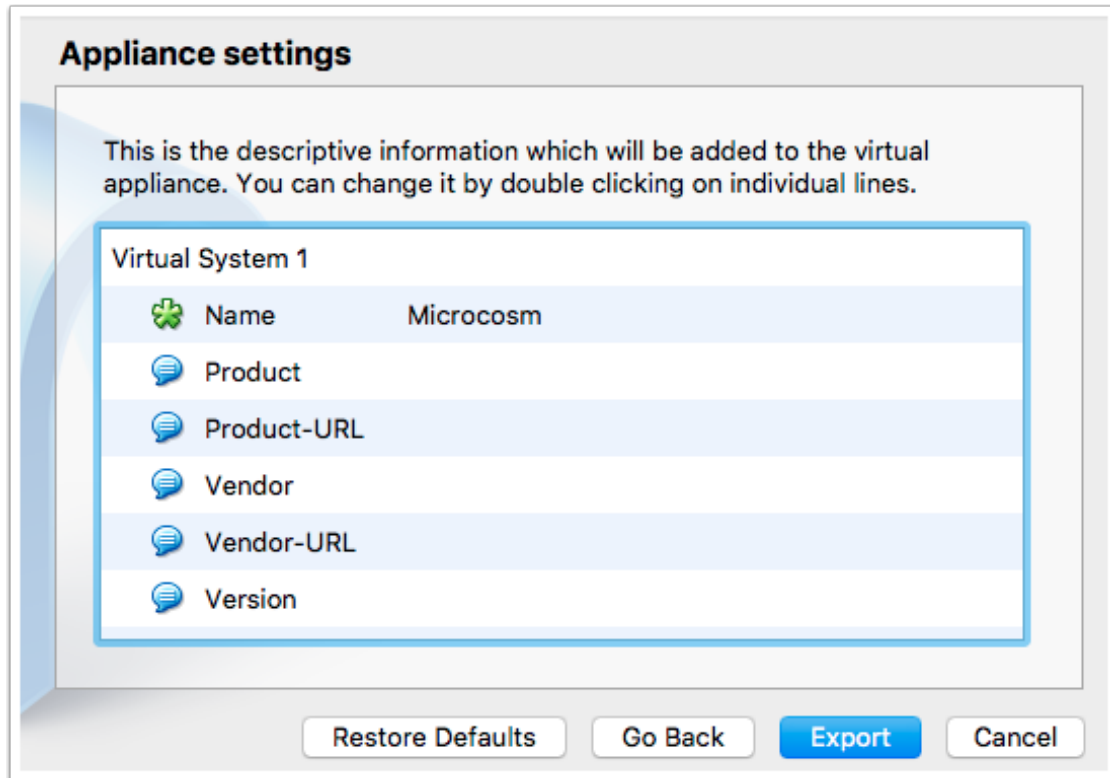
## 18.3 Exporting a VM archive - 3



Accept the defaults and click **Continue**.

# Creating A Virtual Machine for Microcosm

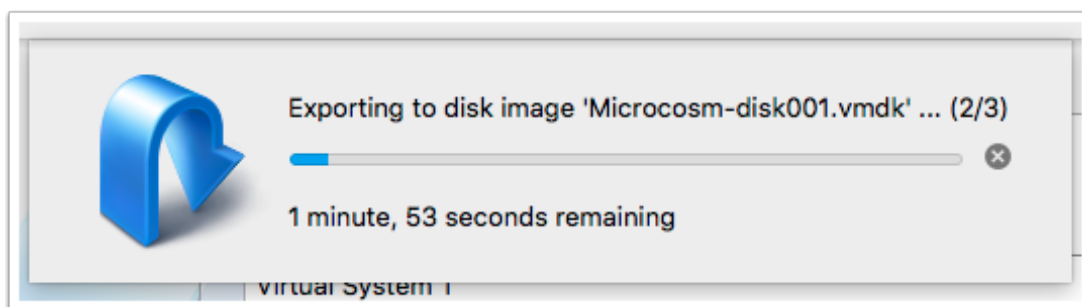
## 18.4 Exporting a VM archive - 4



You can review data about the VM. Although it can be edited via this dialog, it makes sense to correct this at source, check changes and re-start export.

When happy, click **Export**.

## 18.5 Exporting a VM archive - 4

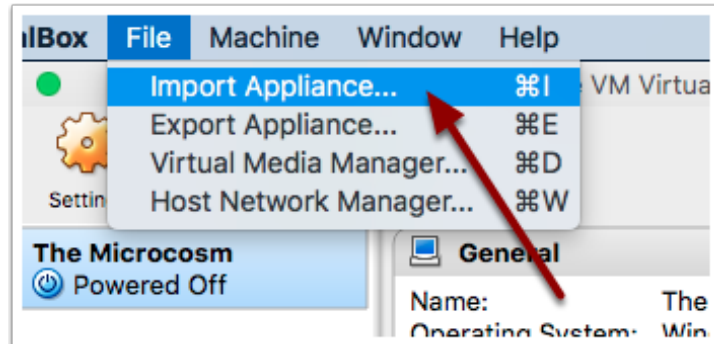


Let the export process run. The time will vary depending on the host computer spec and size of VM.

Once export completes the '.OVA' archive can be copied to the new computer location

# Creating A Virtual Machine for Microcosm

## 18.6 Importing a VM archive - 1

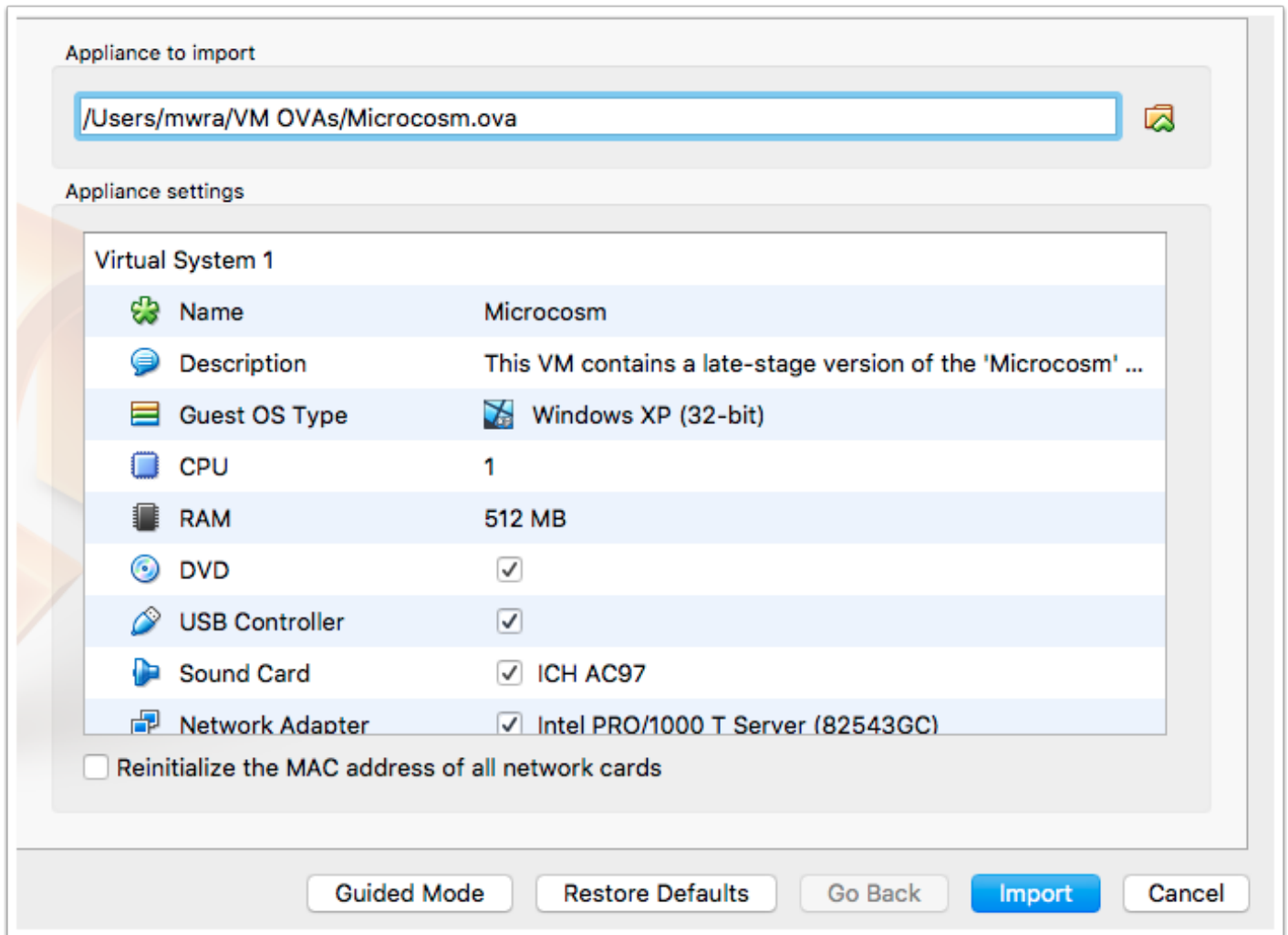


In the new host's VirtualBox, use File menu, Import Appliance...

# Creating A Virtual Machine for Microcosm

## 18.7 Importing a VM archive - 2

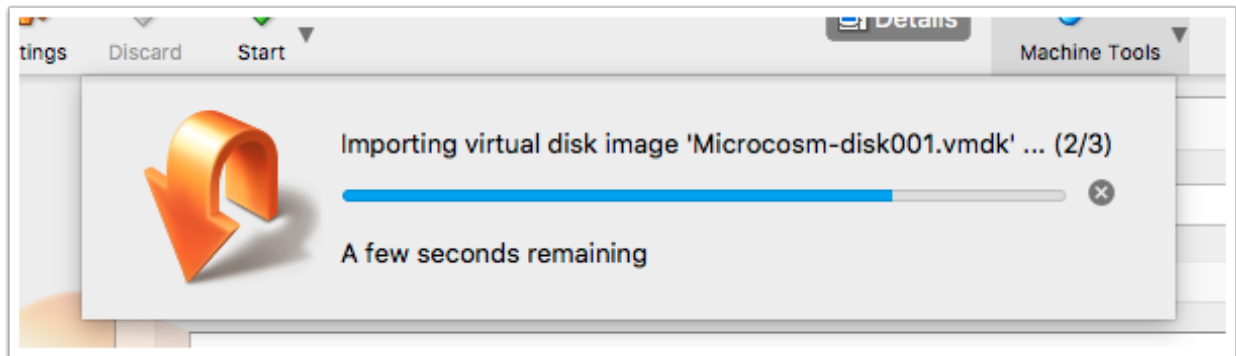
Navigate to the OVA file and select it. The dialog will show some data about the selected VM 'appliance'. Click Import.



# Creating A Virtual Machine for Microcosm

## 18.8 Importing a VM archive - 3

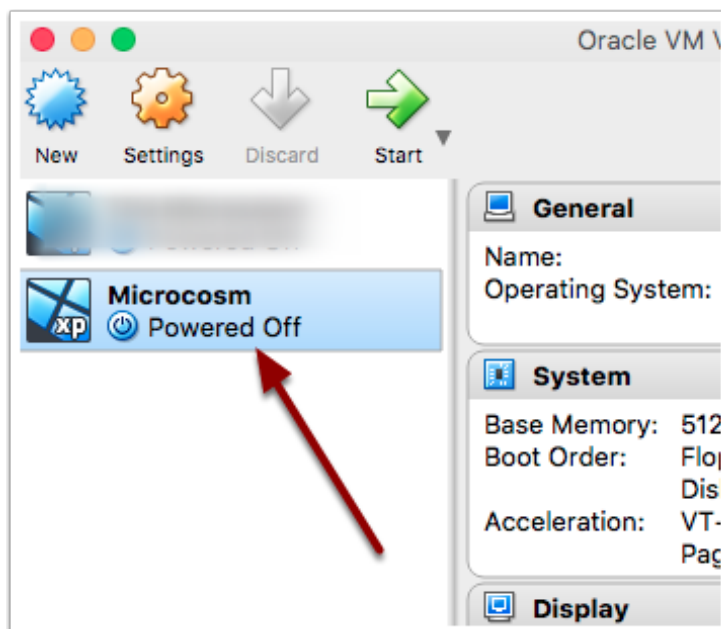
Let the import run.



## 18.9 Importing a VM archive - 4

The new VM is now listed in the VirtualBox app list of VMs and is ready for use.

It is advisable to quickly to boot up the new VM and check for any configuration issues, and to set up any local devices, shared folders that may be needed. The VM can then be shut down and the end user(s) informed the VM is ready for their use.

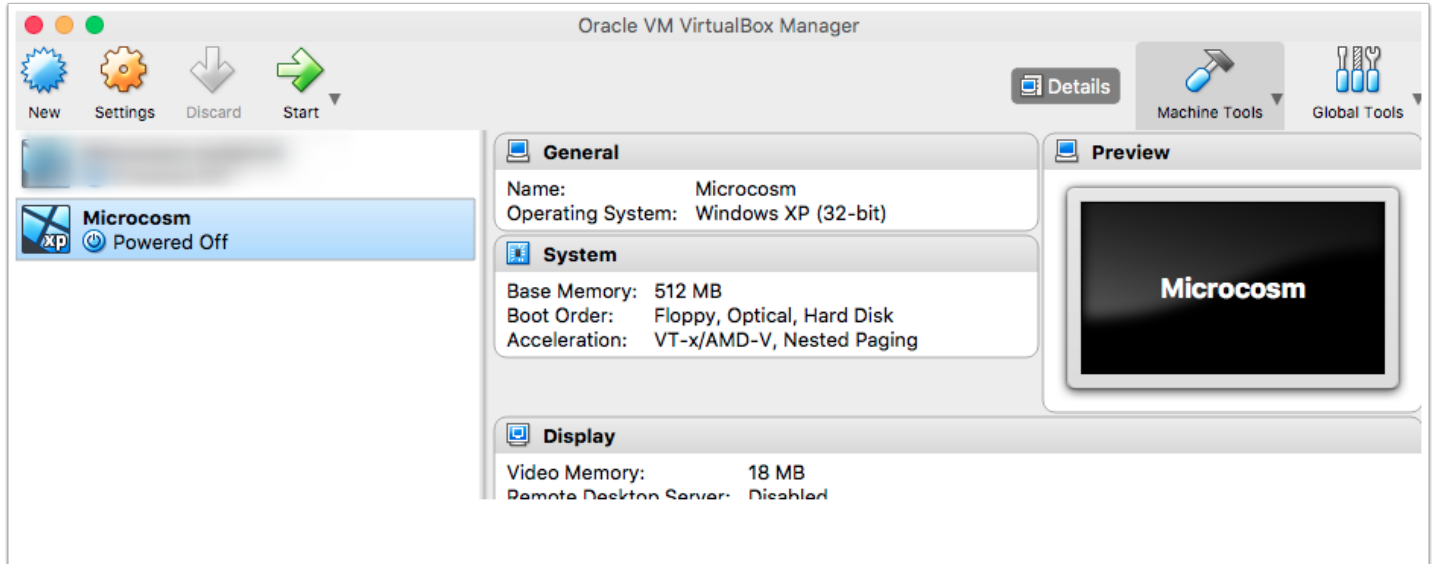


## 19. VM Transfer Method #2 - Copy/Add VM

In this method the folder holding the VM is copied to a new computer and the machine is 'added' to Virtual Box. This method is simple but involved moving multiple files, albeit all within one OS folder.

# Creating A Virtual Machine for Microcosm

## 19.1 Finding the VM in VirtualBox

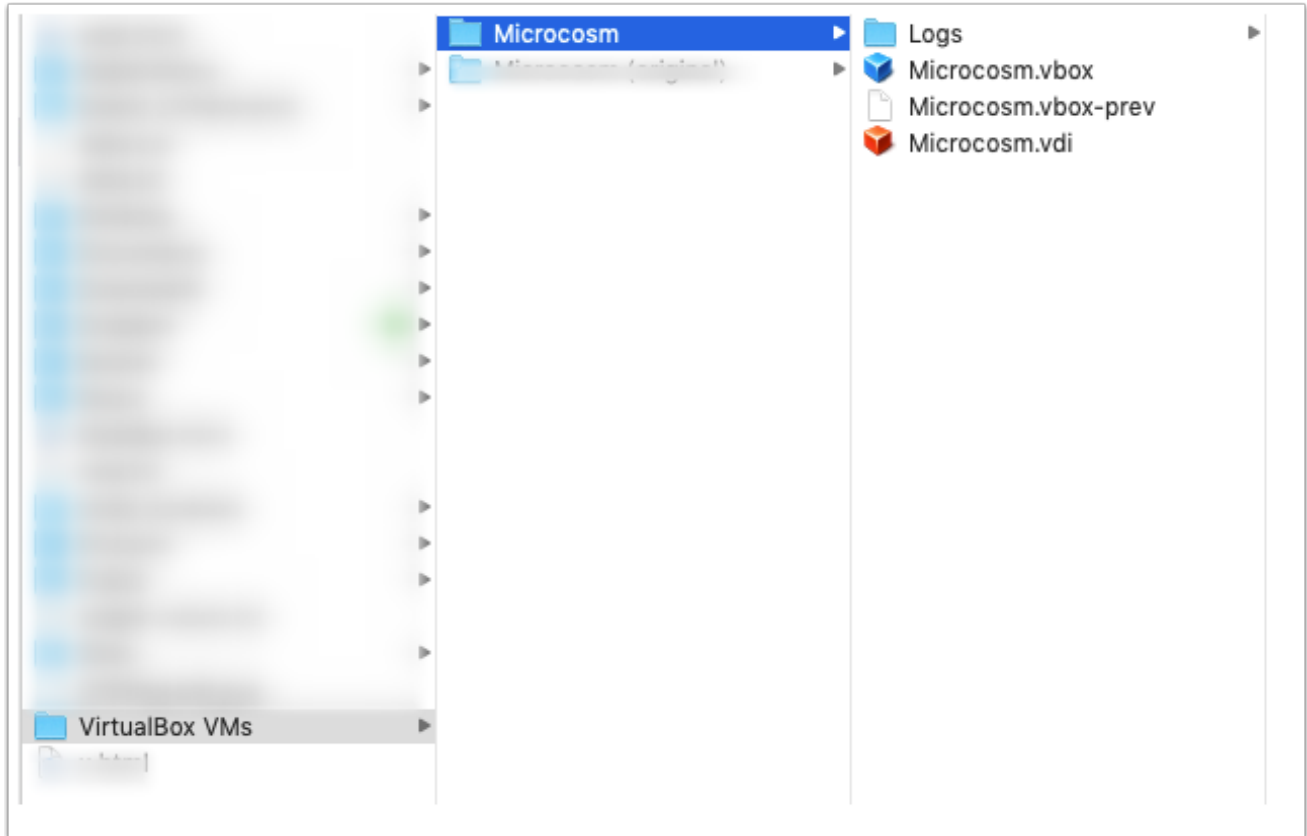


The listbox in the VirtualBox app screen lists VMs created on the current host. When a VM is selected, the right side of the window is populated with information about the VM. When running, the preview window shows a snapshot of the running VM's current screen. The **Settings** button in the toolbar can be used to access the VM's Properties dialog and to view/edit aspects of the VM.

If the VM was last closed using the hosted OS' own shut-down button the VM may show as 'Aborted' rather than 'Powered Off'. In testing this proved not to be problematic and the VM re-launched without problem.

# Creating A Virtual Machine for Microcosm

## 19.2 Copying the VM to another computer's VirtualBox VM folder



VirtualBox stores each discrete VM in a folder named as in the VM list in the app. To copy a VM copy the folder to the relevant location on the new computer. The logs file (which is small) is likely not needed and will be recreated if needs be; not tested so it is suggested to copy the whole VM folder). If necessary to send across the LAN or WAN it may prove prudent to compress the whole folder into a single archive and expend at the receiving location.

Home folders for VMs:

macOS: `~ /VirtualBox VMs` .

Windows: `%HOMEDRIVE%%HOMEPATH%\VirtualBox VMs` which normally expands out to `C:\Users\[username]\VirtualBox VMs` .

Linux: `/home/[USER NAME]/.config/VirtualBox` .

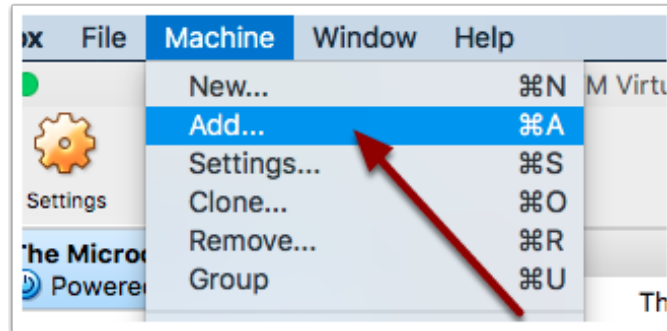


# Creating A Virtual Machine for Microcosm

## 19.3 Adding a copied VM into VirtualBox - 1

In VirtualBox use menu **Machine**, **Add...**

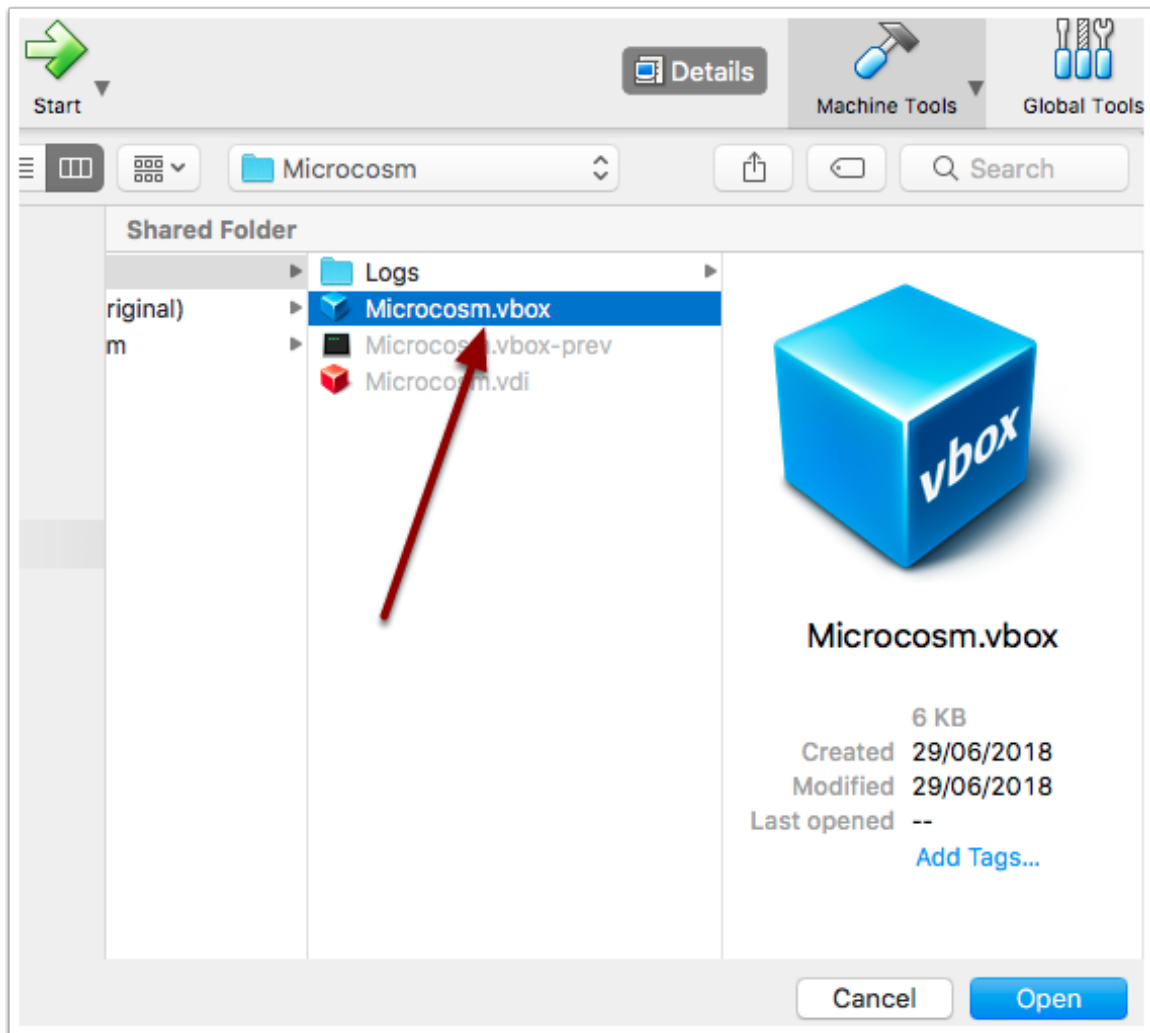
(It might seem logical to use menu **File**, **Import Appliance**, but this doesn't work with copied VMs)



# Creating A Virtual Machine for Microcosm

## 19.4 Adding a copied VM into VirtualBox - 2

Navigate to the newly copied-in VM's 'vbox' file and click Open.

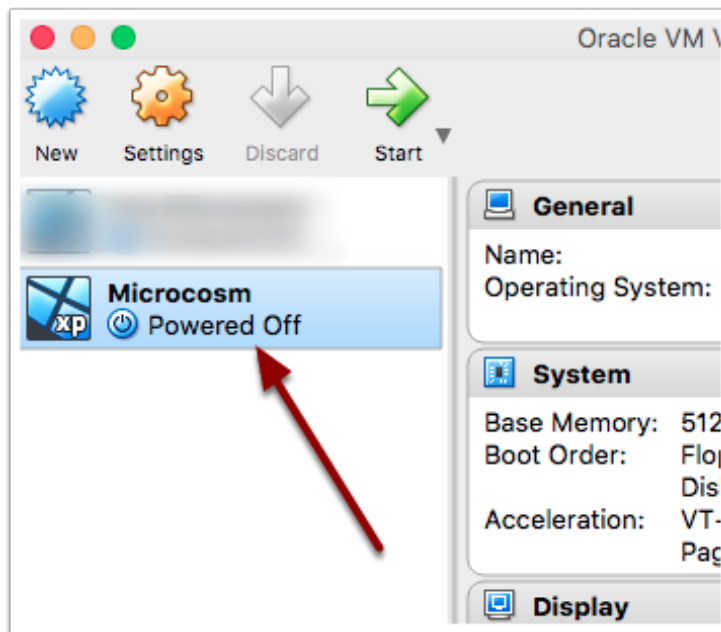


# Creating A Virtual Machine for Microcosm

## 19.5 Adding a copied VM into VirtualBox - 3

The new VM is now listed in the VirtualBox app list of VMs and is ready for use.

It is advisable to quickly to boot up the new VM and check for any configuration issues, and to set up any local devices, shared folders that may be needed. The VM can then be shut down and the end user(s) informed the VM is ready for their use.



## 20. Possible UUID clash on Import

Note step 11.8. If The GuestAdditions ISO was left mounted within the VM at the original computer, import may generate a UUID clash. This has to be fixed at source by un-mounting the ISO before closing and copying/exporting the VM

For this reason, it is a good idea to do *at least one* export/import or copy/add of the VM to a different computer. For wider distribution it is useful to test adding to each of a Windows, Mac and Linux PC.

## 21. Finished

The new VM is now complete and ready for use.