

# SPEEDING UP “WINDOWS XP”

by Francis Chao  
fchao2@yahoo.com  
(520)331-5465

**TuCS** COMPUTER  
**Son**  
SOCIETY

**TMUG**  
TUCSON  
MACINTOSH  
USERS GROUP

Web location for  
this presentation:

<http://aztcs.org>

Click on “Meeting Notes”

# SUMMARY

Using the "System" applet of the Windows "Control Panel" and services.msc which is a "Microsoft Management Console" *Snap-in*, you can dramatically increase the speed of any "Windows XP" computer, as perceived by the end-user.

# BASIC STRATEGY

- No direct editing of the “registry”
- Make reversible changes to the "Windows.." operating system
- Make “image backups” and “restore points”, prior to making changes
- Take advantage of the compounding effects of multiple speedup tweaks

# PROCEDURE & TOPICS

- Step 1: Make an image backup of your "Windows" hard drive
- Step 2: Create a "restore point" with Windows' "System Restore"
- Step 3: Set "Visual Effects" for "..best performance"
- Step 4: Supersize the swap file
- Step 5: Run "Revo Uninstaller Freeware"

# PROCEDURE & TOPICS (continued)

- Step 6: Use "services.msc" to disable some services
- Step 7: Perform "Error-checking" on all hard drives.
- Step 8: Defragment the Windows swap file using Microsoft's "PageDefrag".
- Step 9: Defragment all hard drives
- Step 10: Turn off startup programs

# DETAILS OF STEP 1: Drive Image Backup

- Use “Macrium Reflect Free Edition”, “Clonezilla”, or “Acronis True Image Home..” AND an external hard drive to create a "backup image" of the entire C: drive of your “Windows XP” computer.

# DETAILS OF STEP 1: Drive Image Backup

- Our instructions for using the free and open source “Clonezilla” to make an image backup of a hard drive can be found at [http://aztcs.org/meeting\\_notes/winhardsig/CZ-backup.pdf](http://aztcs.org/meeting_notes/winhardsig/CZ-backup.pdf)

## **DETAILS OF STEP 2:**

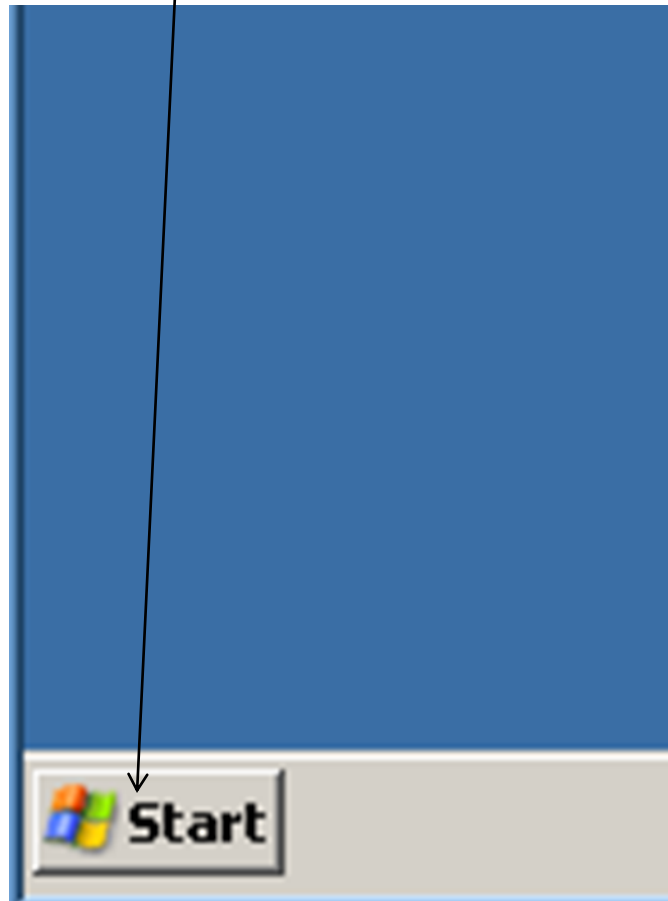
### **Create a “Restore Point”**

- **Use Windows' “System Restore” to create a “restore point”:**

## DETAILS OF STEP 2:

### Create a “Restore Point” (continued)

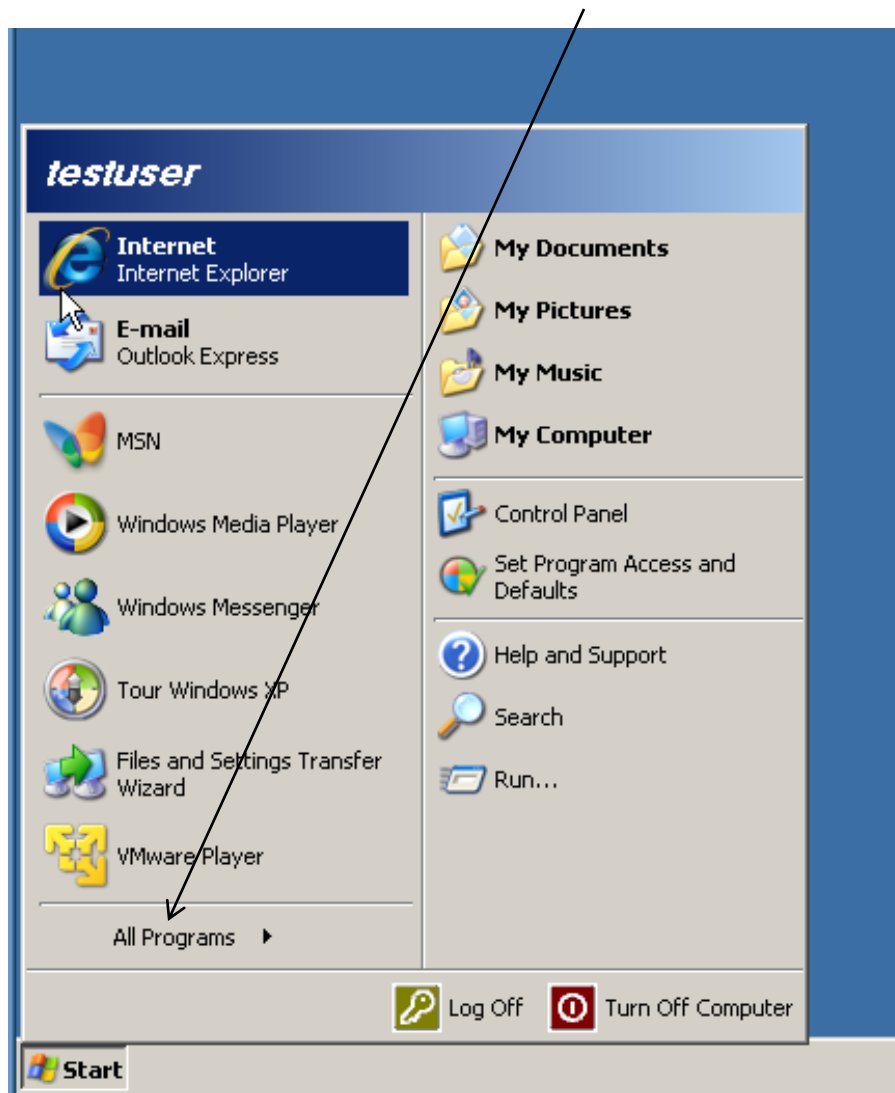
- Step 2a: Click on the “Start” button which is located at the left or bottom of the gray “taskbar” in “Windows XP”:



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

- Step 2b: Click on “All Programs” in the “Start menu”:



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

- Step 2c: A pop-up sub-menu will be displayed:



# DETAILS OF STEP 2:

## Create a "Restore Point" (continued)

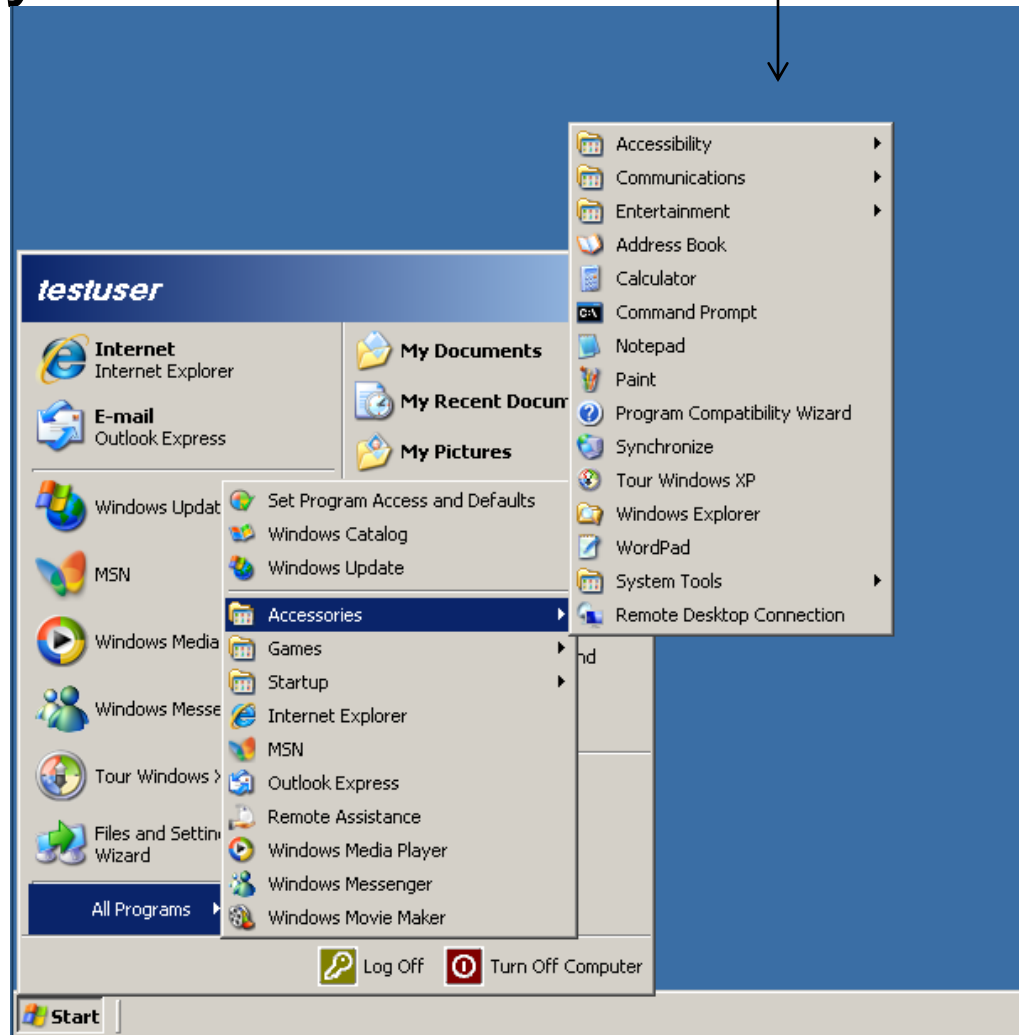
- Step 2d: Click on "Accessories":



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

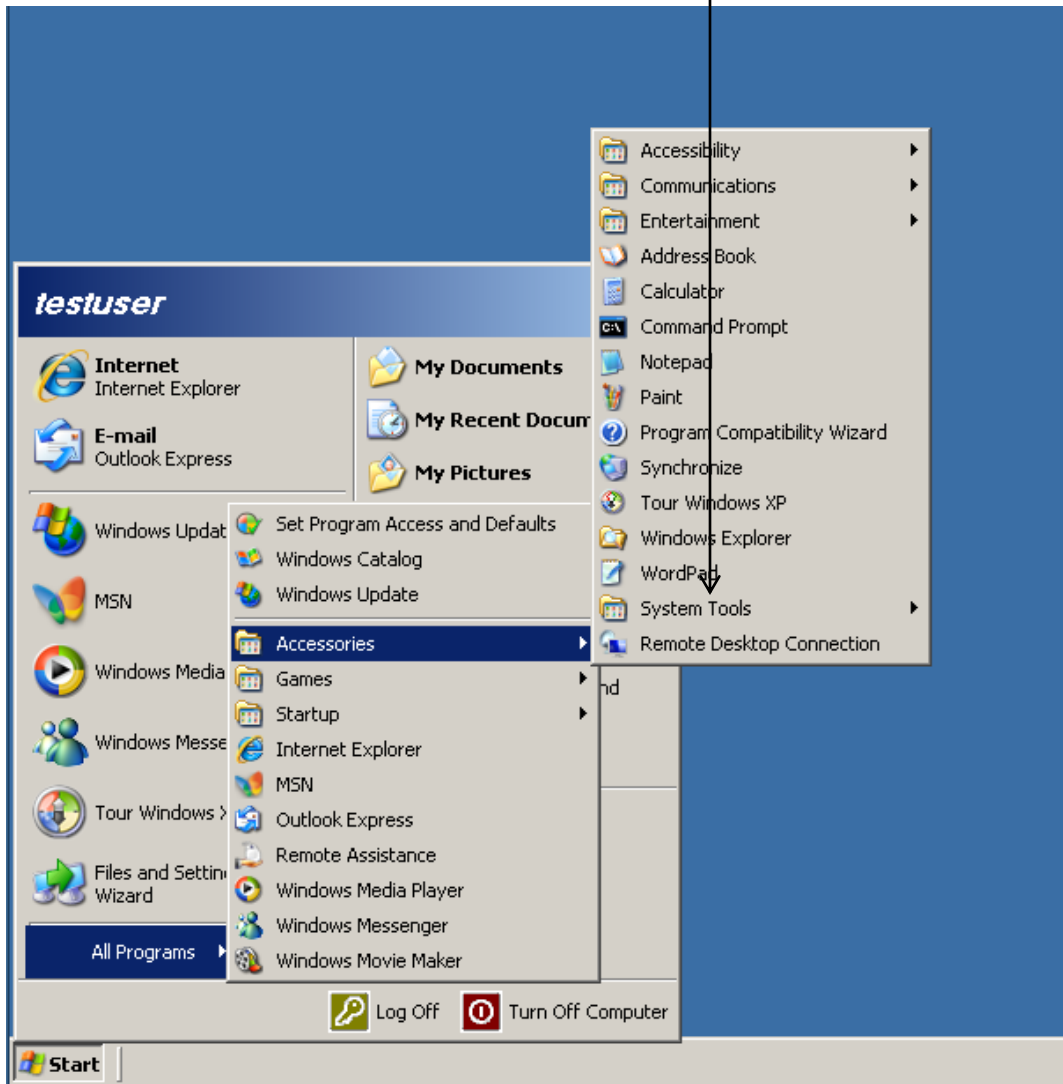
• Step 2e: A second pop-up submenu will be displayed:



# DETAILS OF STEP 2:

## Create a "Restore Point" (continued)

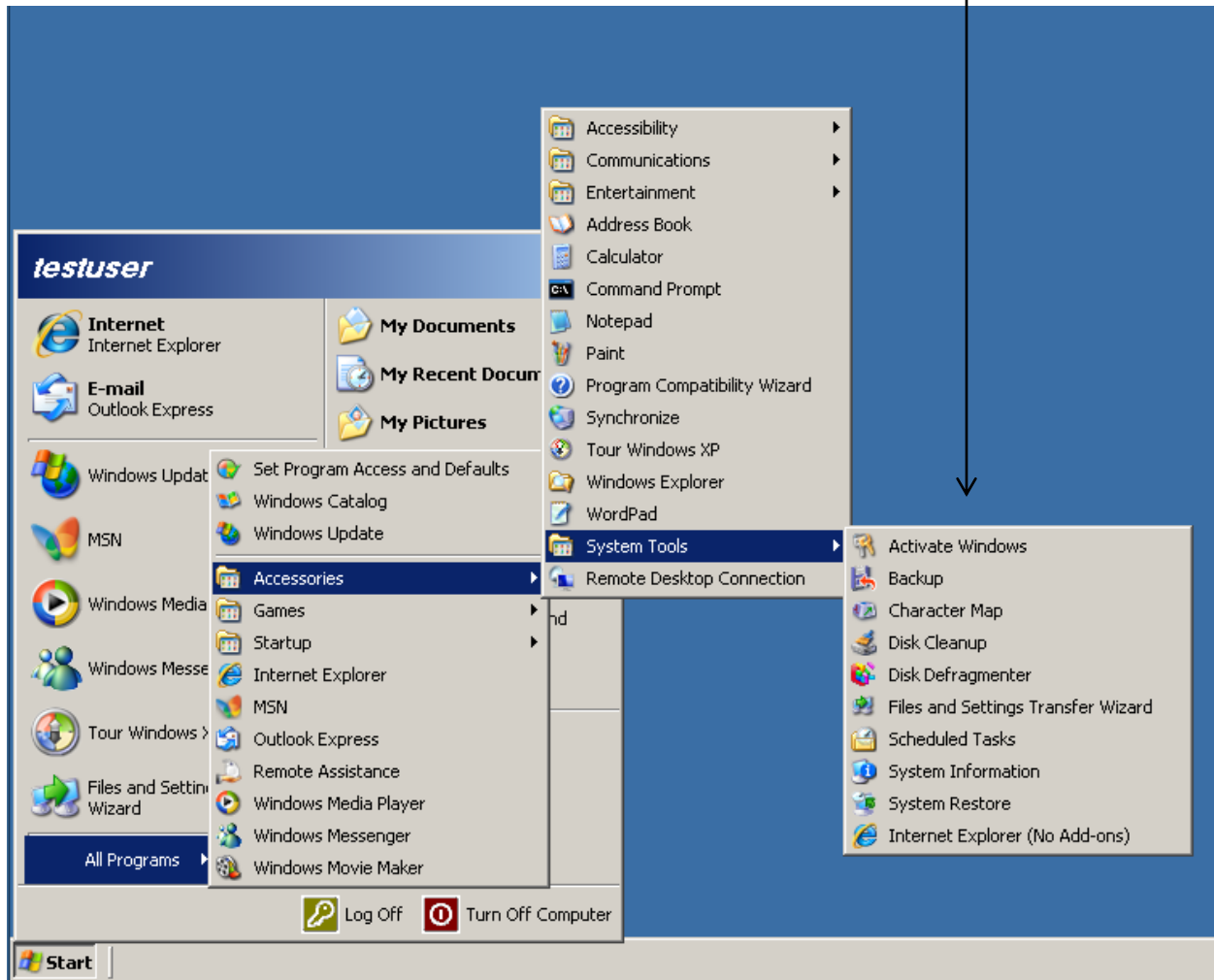
- Step 2f: Click on "System Tools":



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

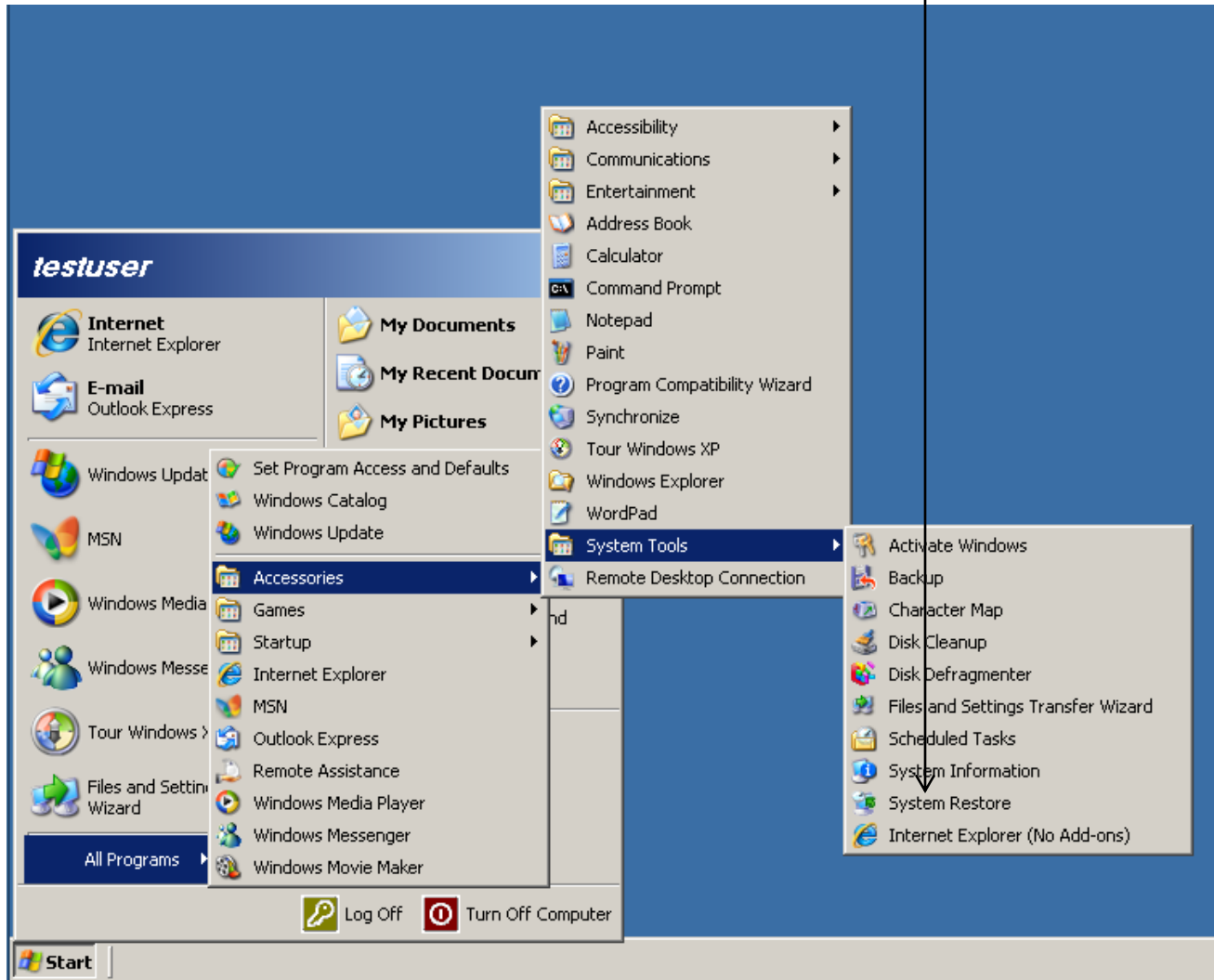
Step 2g: A third pop-up menu will be displayed:



# DETAILS OF STEP 2:

## Create a "Restore Point" (continued)

Step 2h: Click on "System Restore":



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

- Step 2i: Select the "Create a restore point" option:

**System Restore**

**Welcome to System Restore** [Help](#)

You can use System Restore to undo harmful changes to your computer and restore its settings and performance. System Restore returns your computer to an earlier time (called a restore point) without causing you to lose recent work, such as saved documents, e-mail, or history and favorites lists.

Any changes that System Restore makes to your computer are completely reversible.

Your computer automatically creates restore points (called system checkpoints), but you can also use System Restore to create your own restore points. This is useful if you are about to make a major change to your system, such as installing a new program or changing your registry.

[System Restore Settings](#)

**To begin, select the task that you want to perform:**

Restore my computer to an earlier time

**Create a restore point**

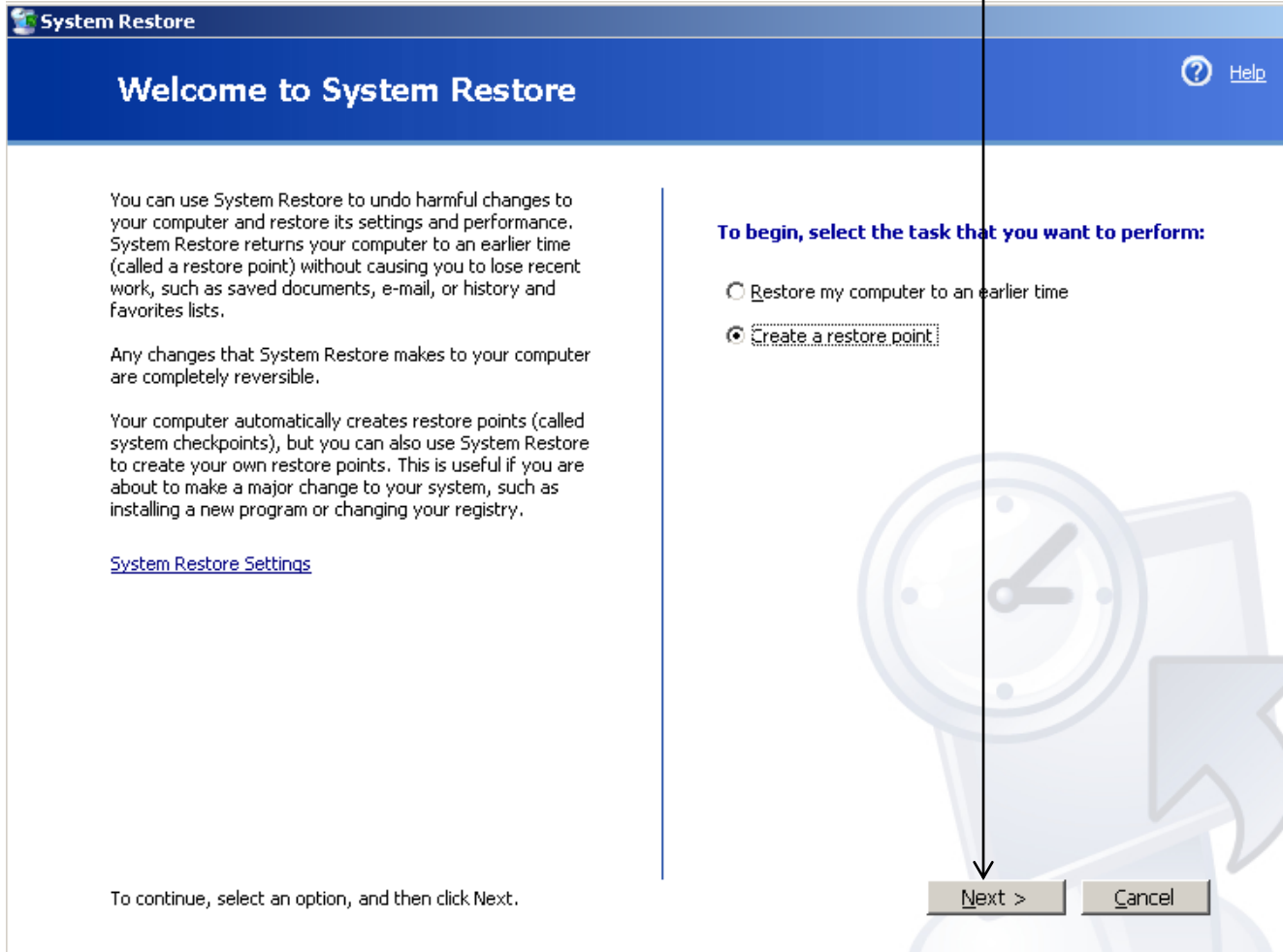
To continue, select an option, and then click Next.

[Next >](#) [Cancel](#)

# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

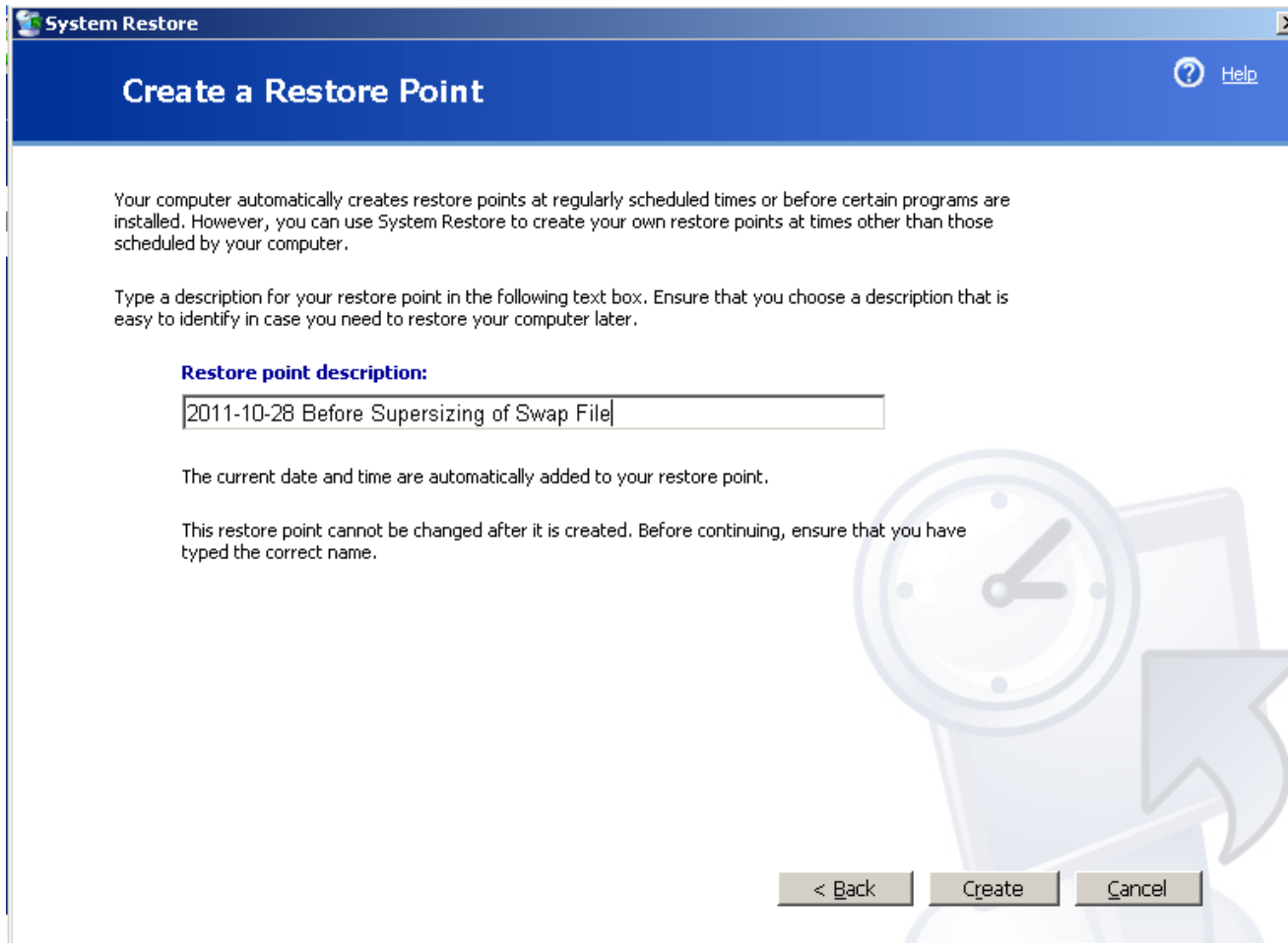
- Step 2j: Click on the "Next" button:



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

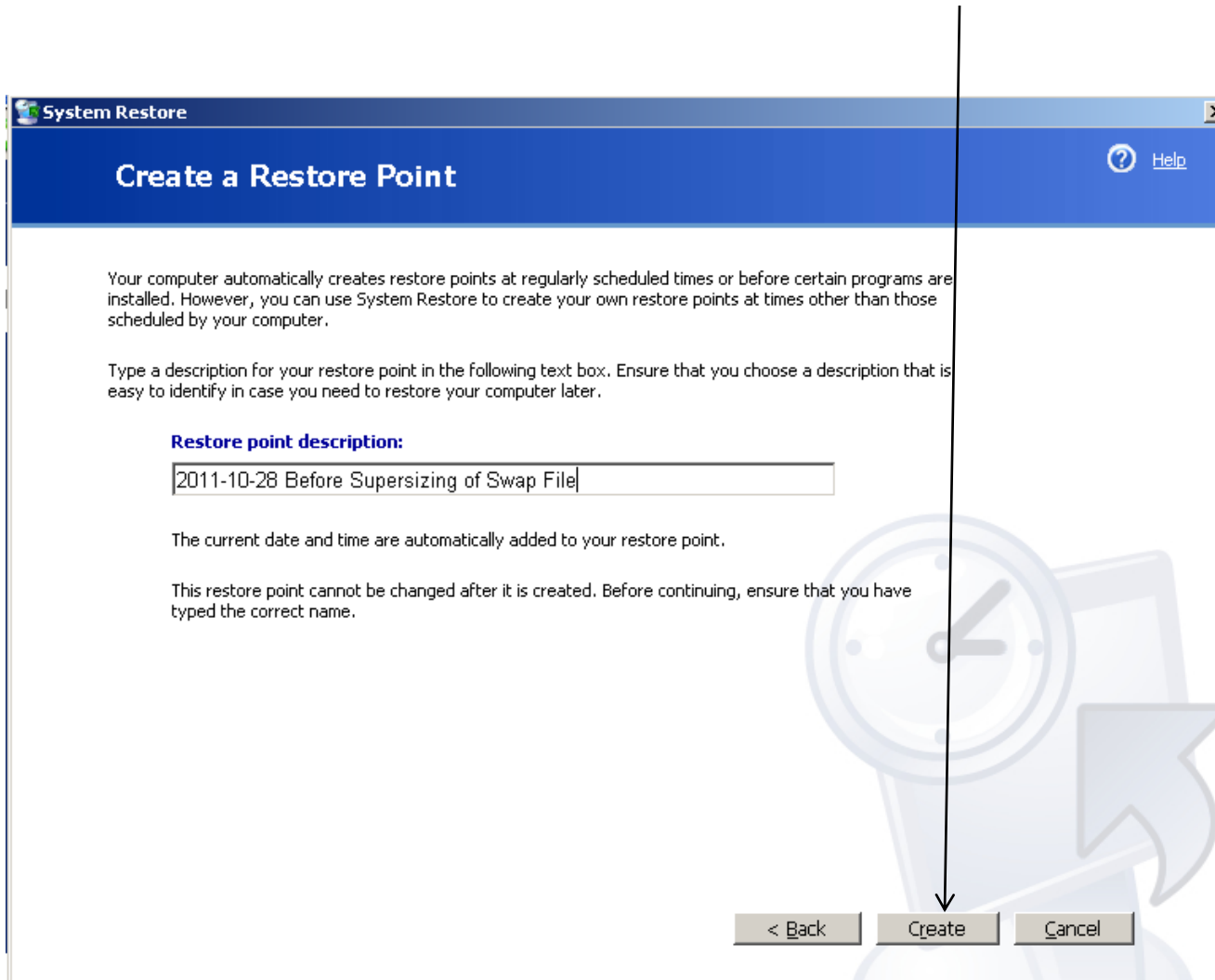
- Step 2k: Type in an appropriate description for the restore point:



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

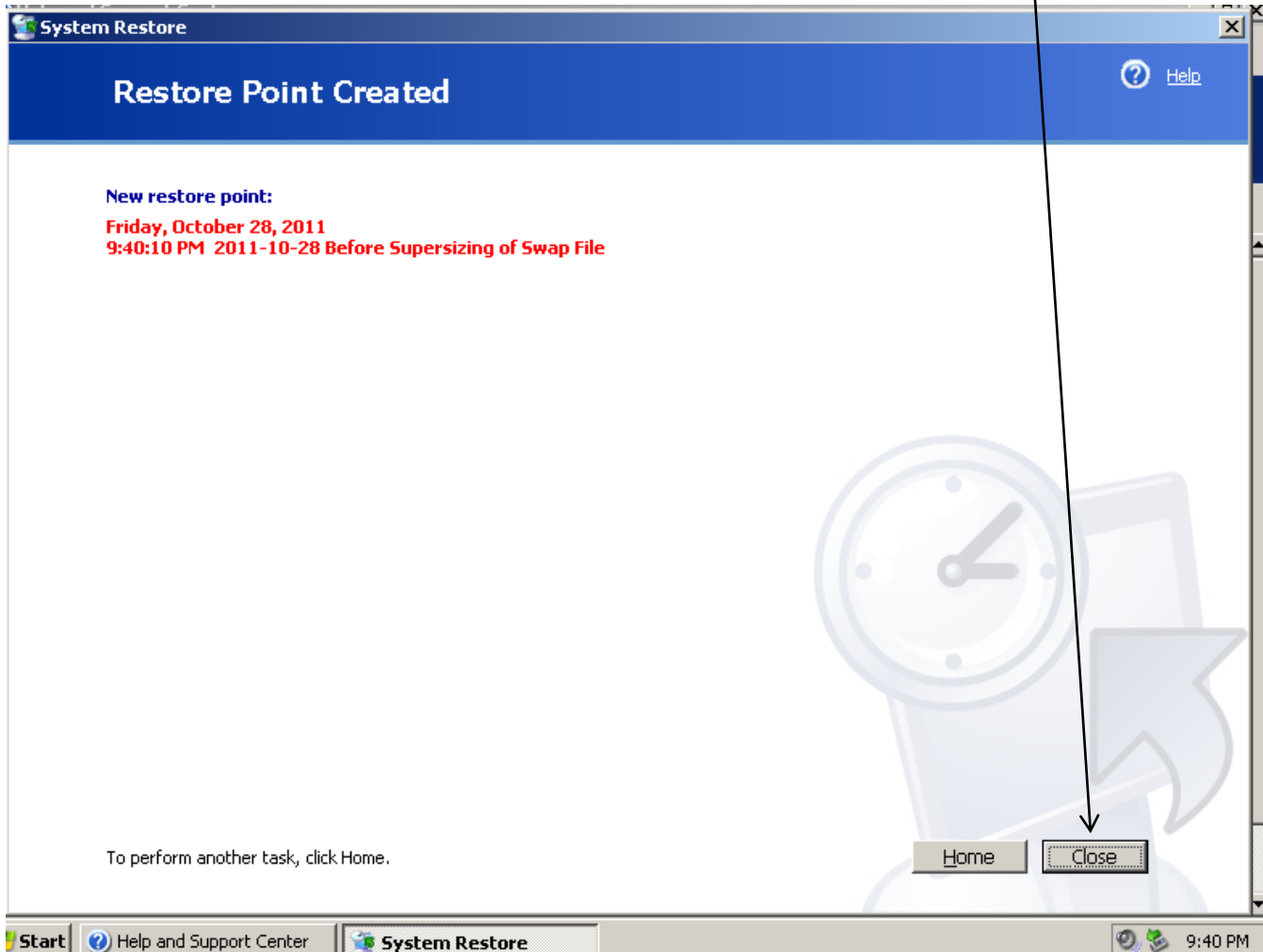
- Step 2L: Click on the "Create" button:



# DETAILS OF STEP 2:

## Create a “Restore Point” (continued)

- Step 2m: Click on the "Close" button:



# DETAILS OF STEP 3:

## Set “Visual Effects” for “Best Performance”

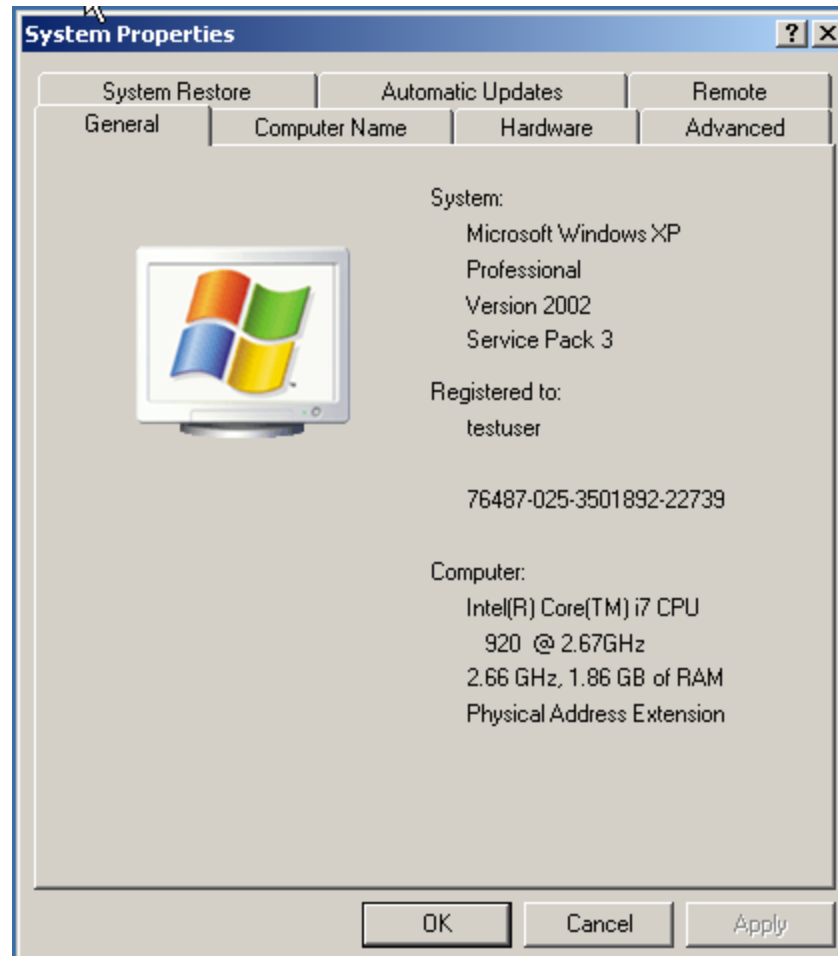
- Step 3a: Double-click on “System” in the “Control Panel”.



# DETAILS OF STEP 3:

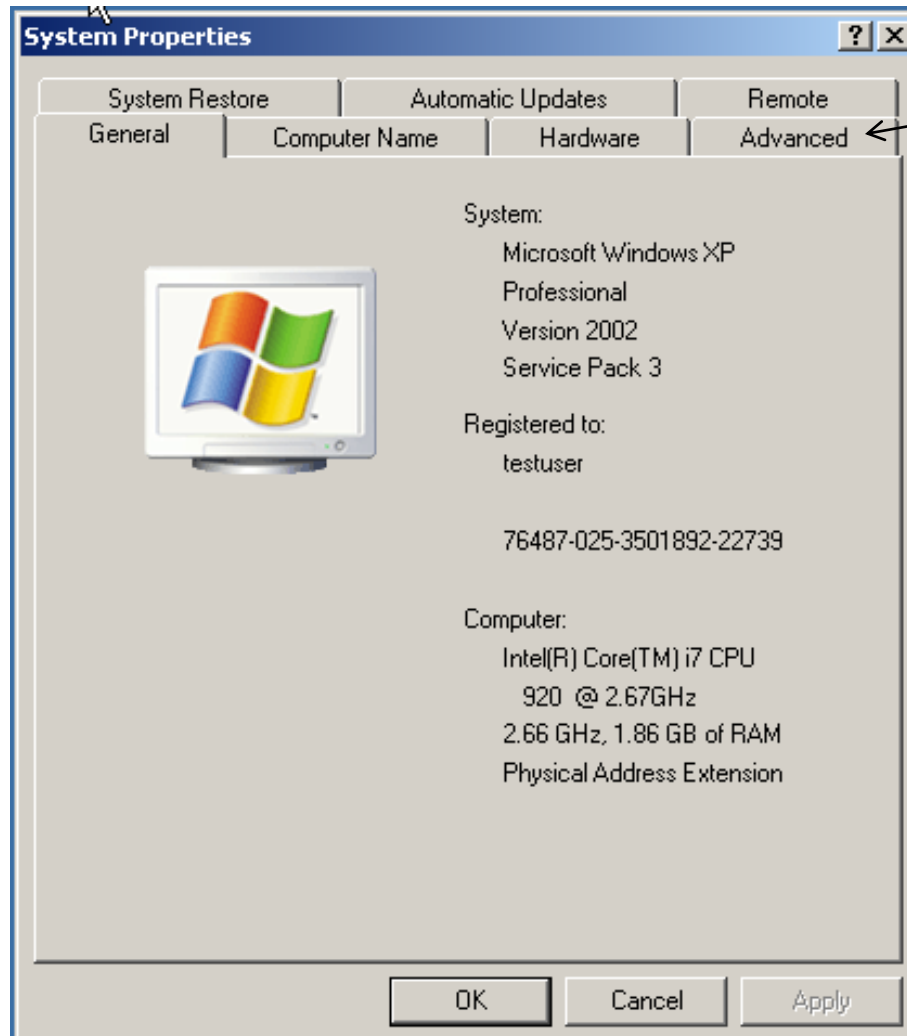
## Set “Visual Effects”.. (continued)

- Step 3b: A “System Properties” box will be displayed:



# DETAILS OF STEP 3: Set “Visual Effects”.. (continued)

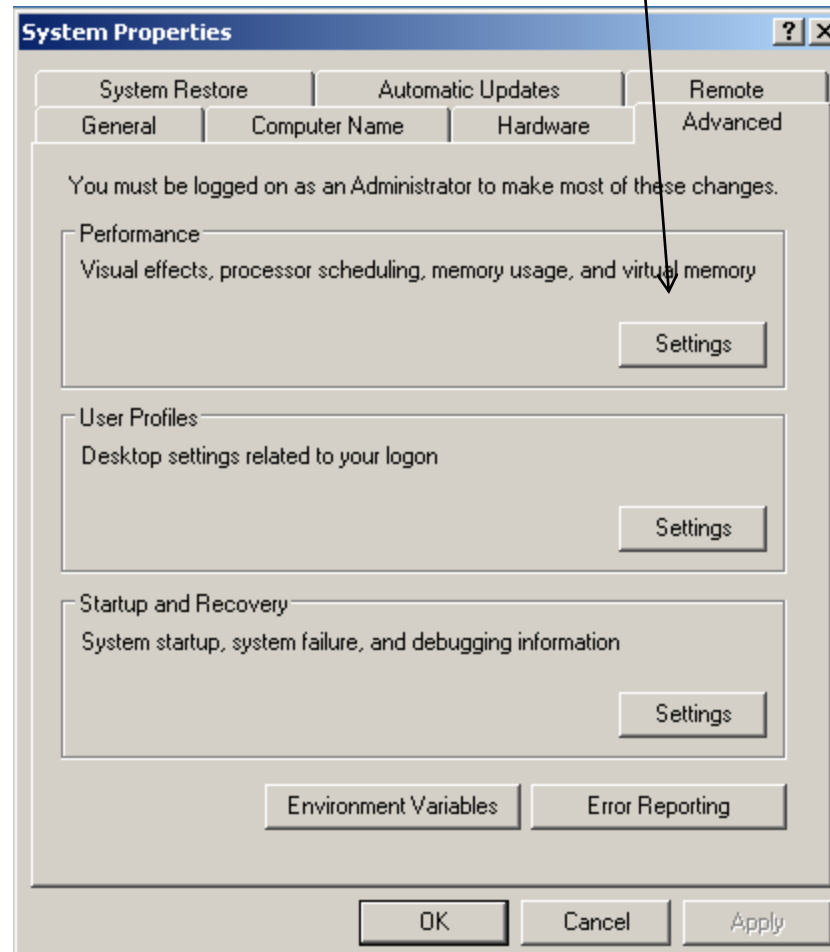
- Step 3c: Click on the “Advanced” tab:



# DETAILS OF STEP 3:

## Set “Visual Effects”.. (continued)

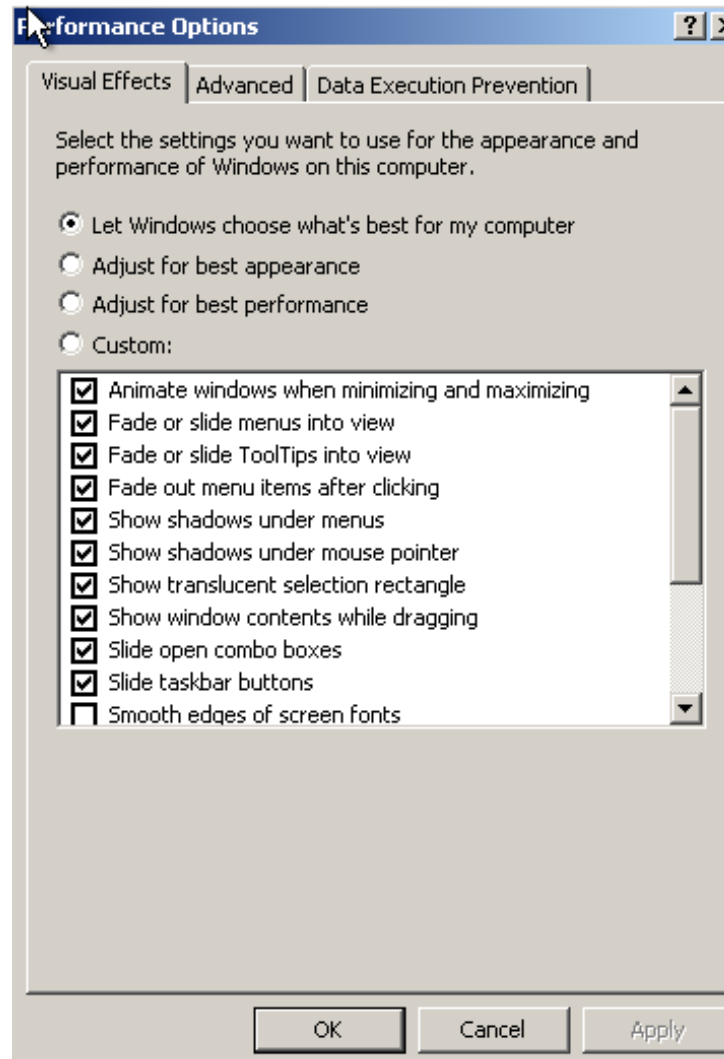
- Step 3d: Click on the “Settings” button in the “Performance” section.



# DETAILS OF STEP 3:

## Set “Visual Effects”.. (continued)

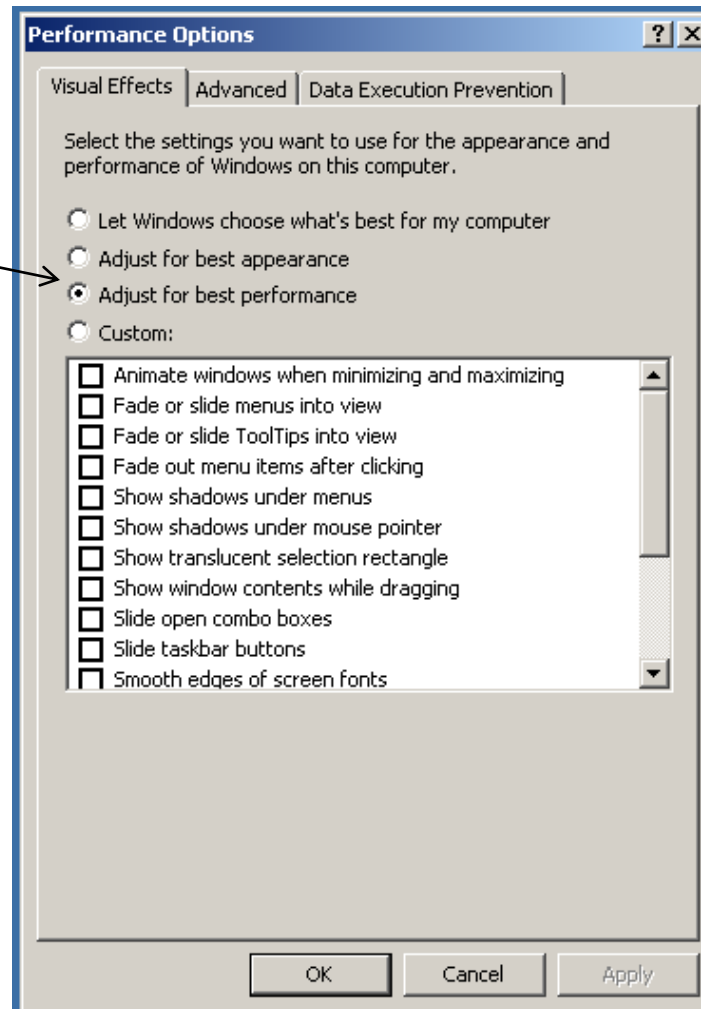
- Step 3e: A "Performance Options" box will be displayed:



# DETAILS OF STEP 3:

## Set “Visual Effects”.. (continued)

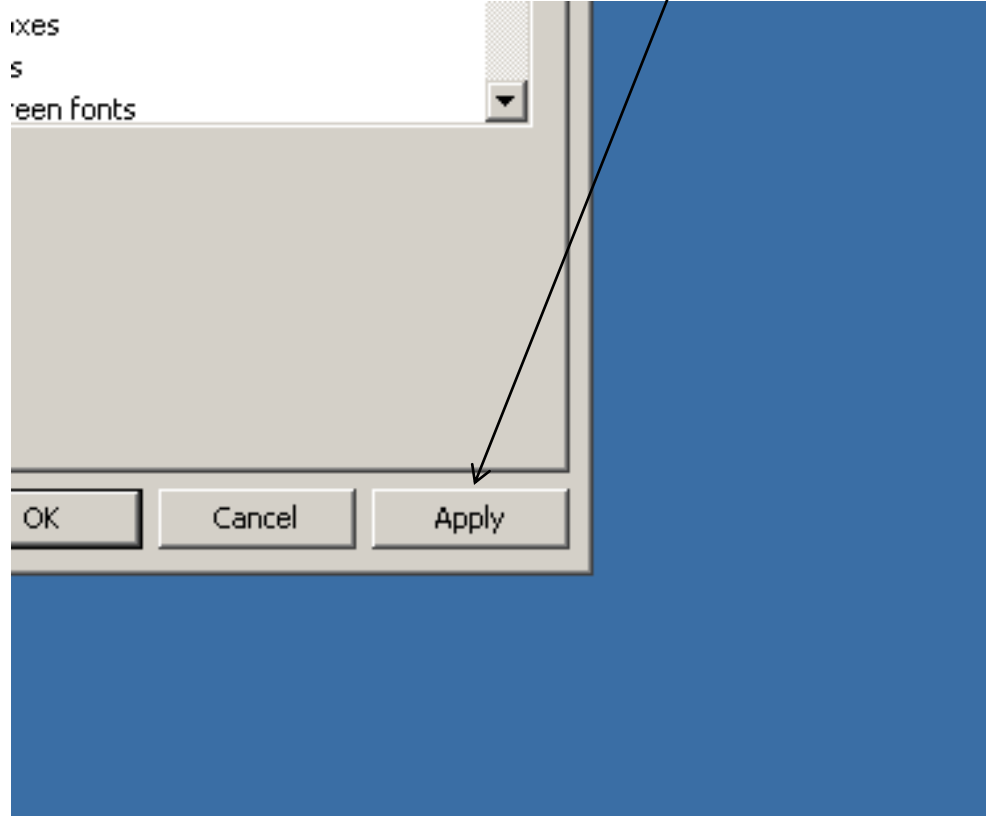
- Step 3f: Select the “Adjust for best performance” option (in the “Visual Effects” tab):



# DETAILS OF STEP 3:

## Set “Visual Effects”.. (continued)

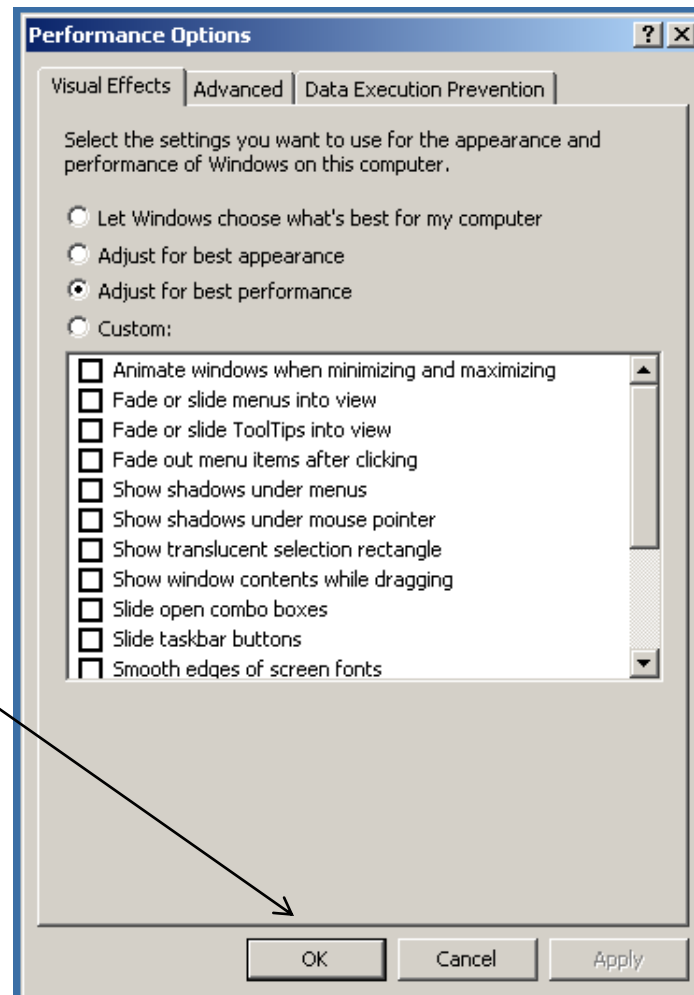
- Step 3g: Click on the “Apply” button of the of the “Performance Options” box (if the “Apply” button is not grayed out.)



# DETAILS OF STEP 3:

## Set “Visual Effects”.. (continued)

- Step 3h: Click on the “OK” button of the “Performance Options” box:



## **DETAILS OF STEP 3:**

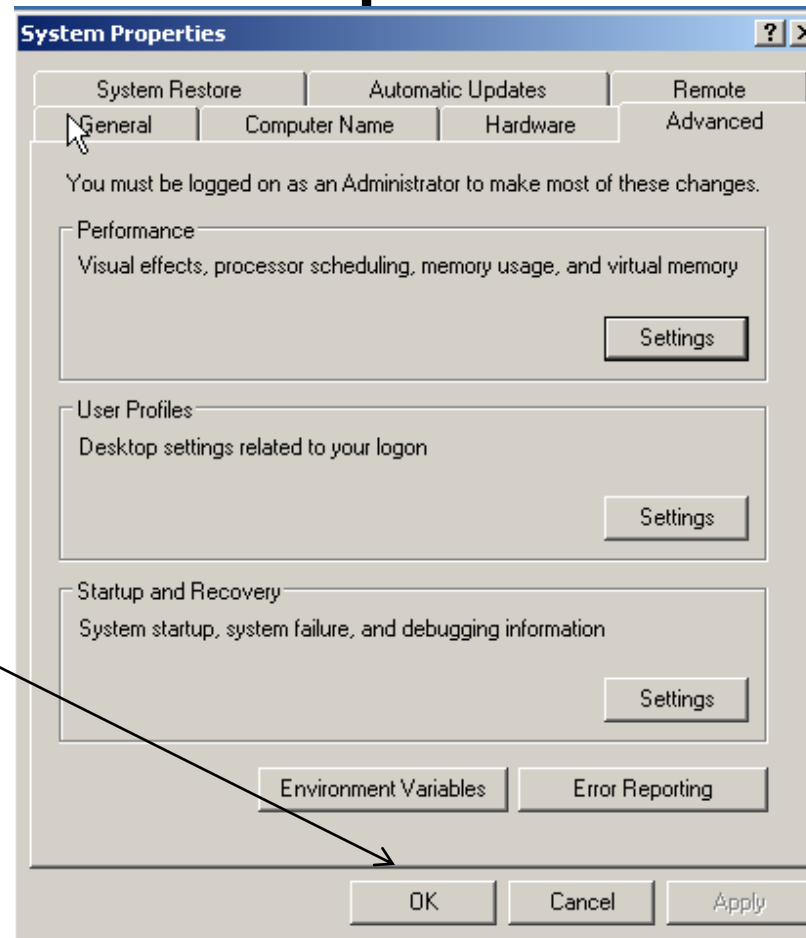
### **Set “Visual Effects”.. (continued)**

- **Step 3i: The "Performance Options" box will disappear.**

# DETAILS OF STEP 3:

## Set “Visual Effects”.. (continued)

- Step 3j: Click on the “OK” button of the “System Properties” box:



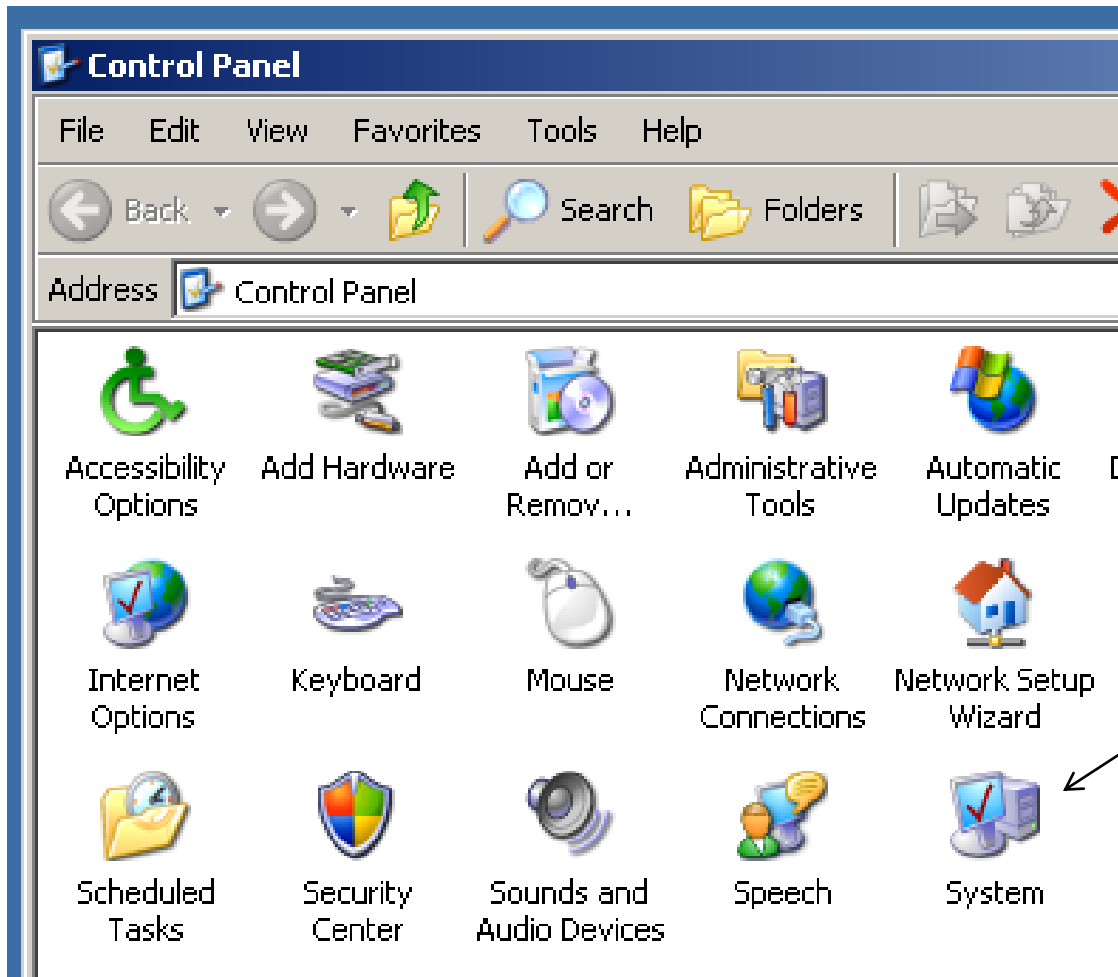
## **DETAILS OF STEP 3:**

### **Set “Visual Effects”.. (continued)**

- **Step 3k: The “System Properties” box will disappear.**

# DETAILS OF STEP 4: Supersize the Swap File

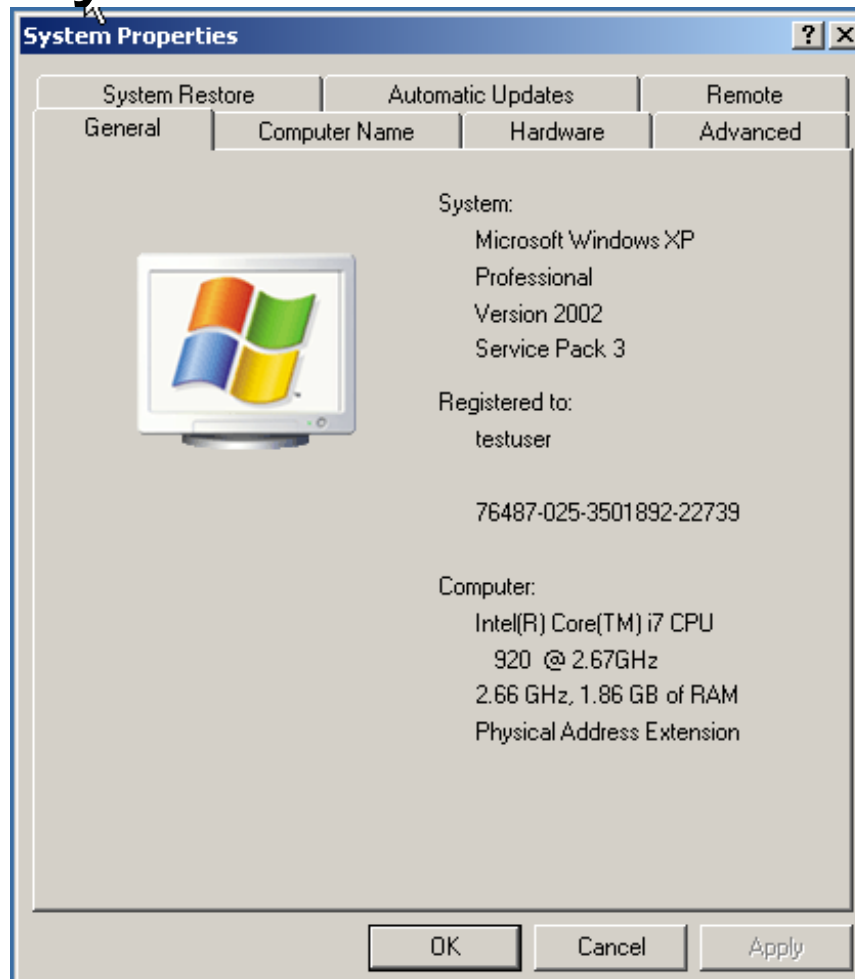
- Step 4a: Double-click on “System” in the “Control Panel”.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

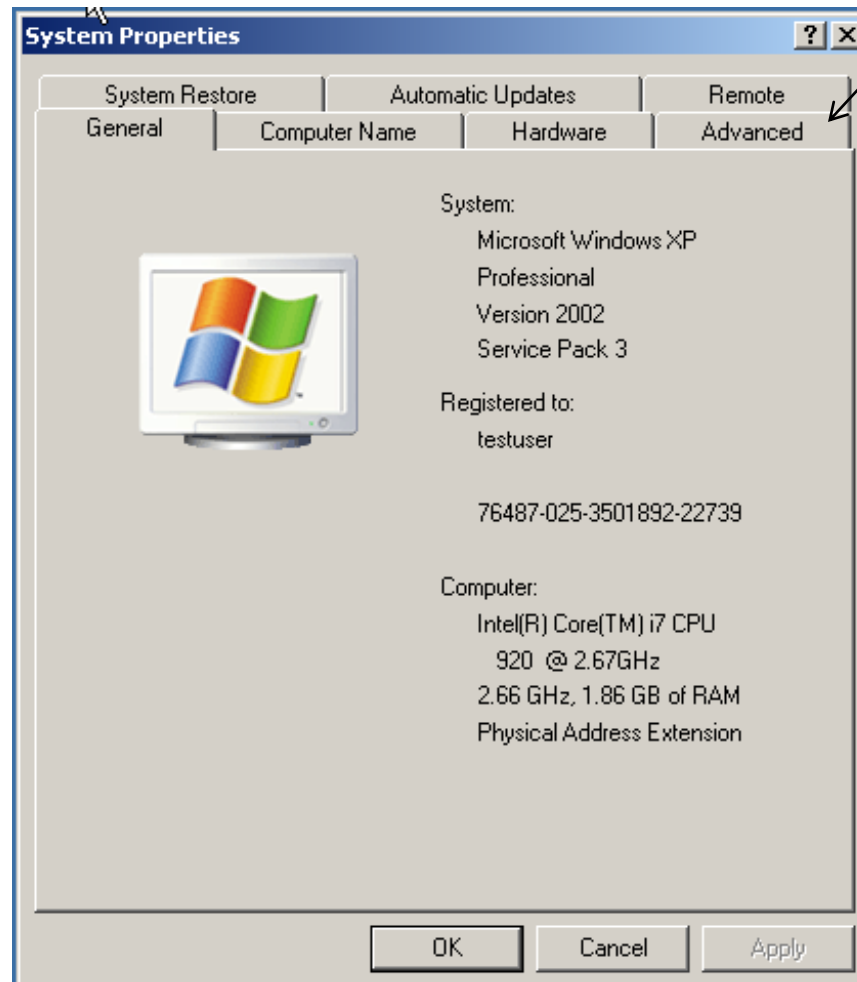
- Step 4b: A “System Properties” box will be displayed:



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

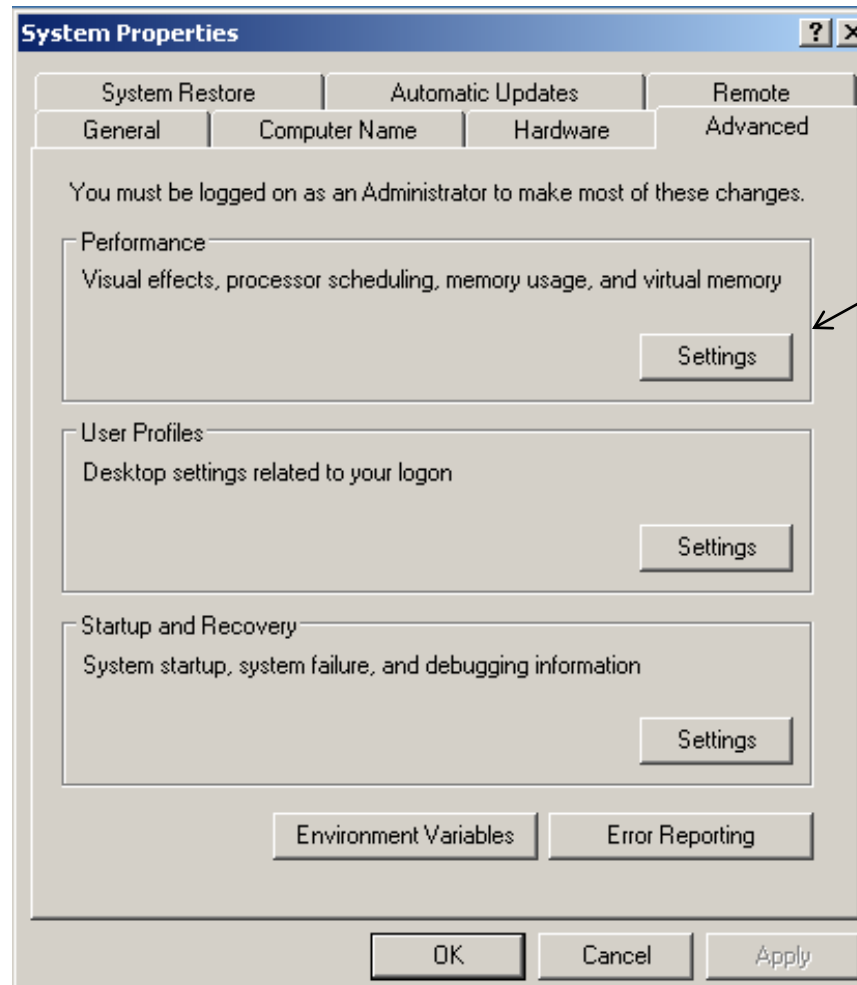
- Step 4c: Click on the “Advanced” tab of the “System Properties” box.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

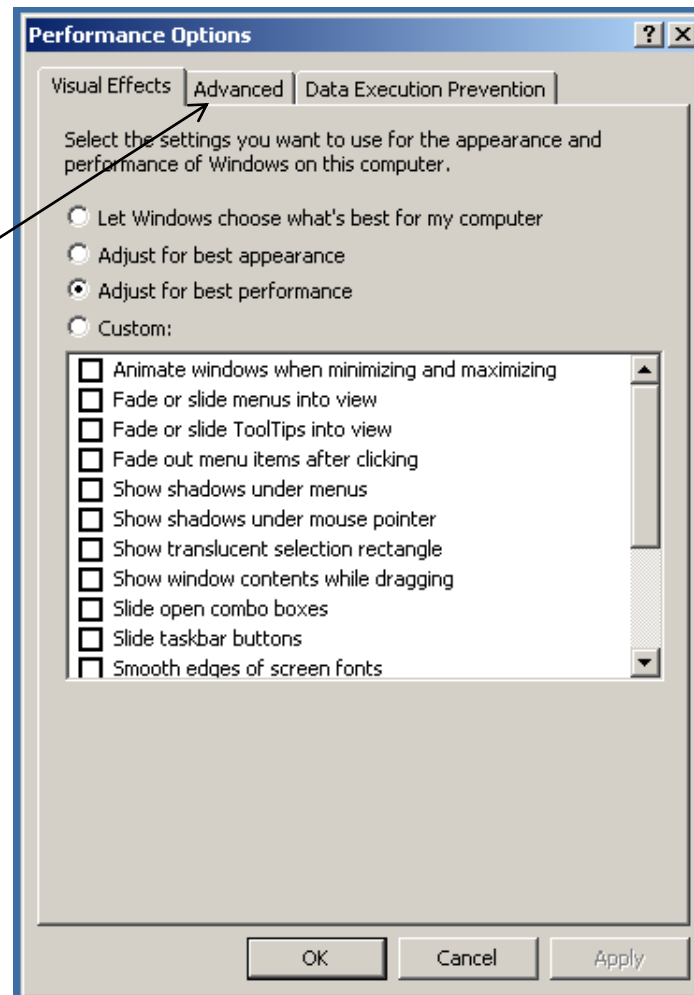
- Step 4d: Click on the “Settings” button in the “Performance” section.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

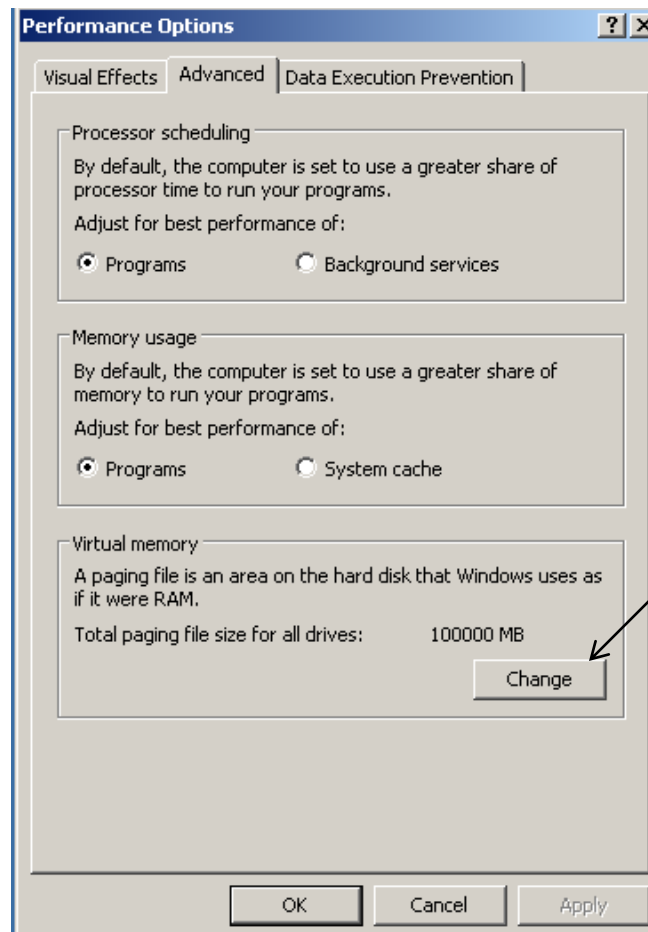
- Step 4e: Click on the “Advanced” tab of the “Performance Options” box.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

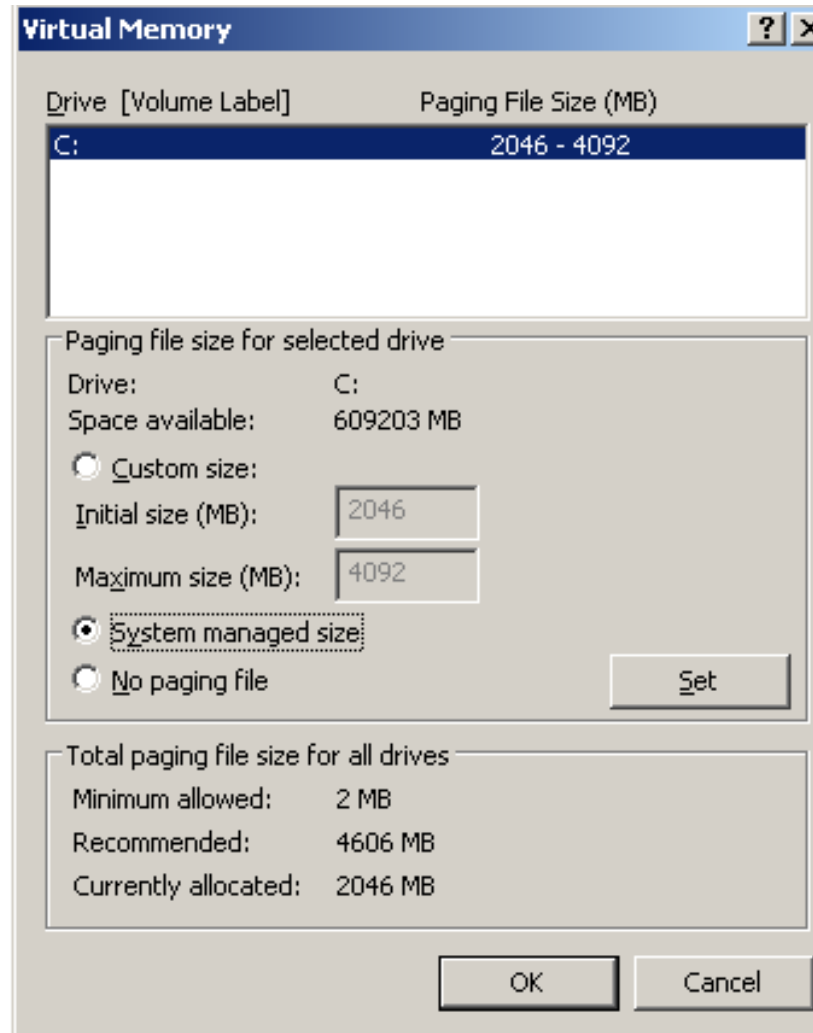
- Step 4f: Click on the “Change” button in the “Virtual Memory” section of the “Advanced” tab of the “Performance Options” box.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

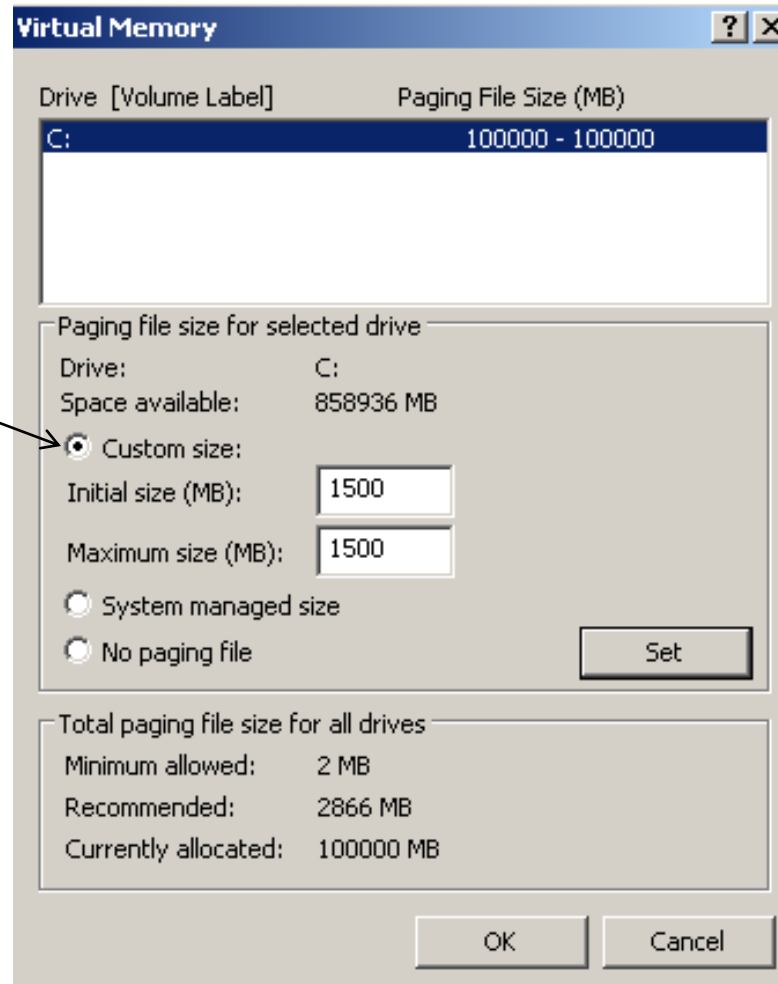
- Step 4g: A “Virtual Memory” box will be displayed:



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

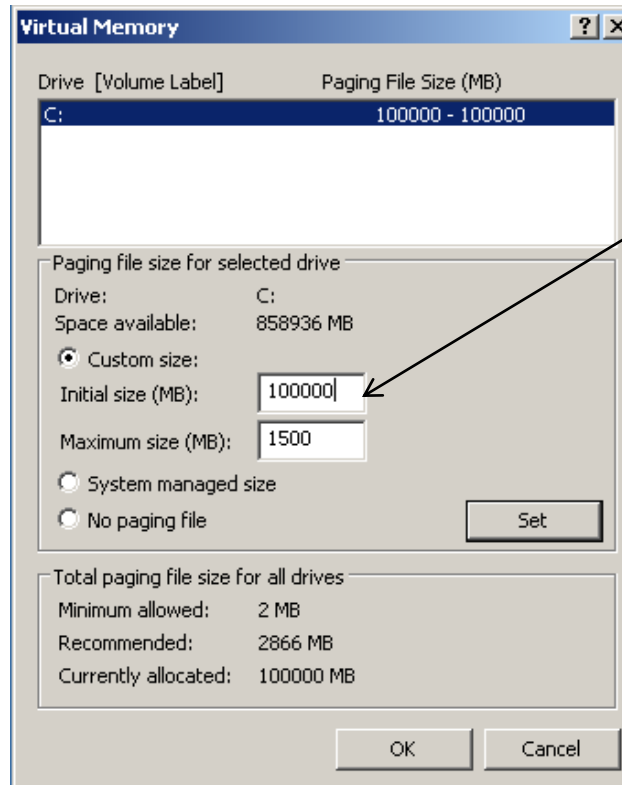
- Step 4h: Select the “Custom size” option of the “Virtual Memory” box.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

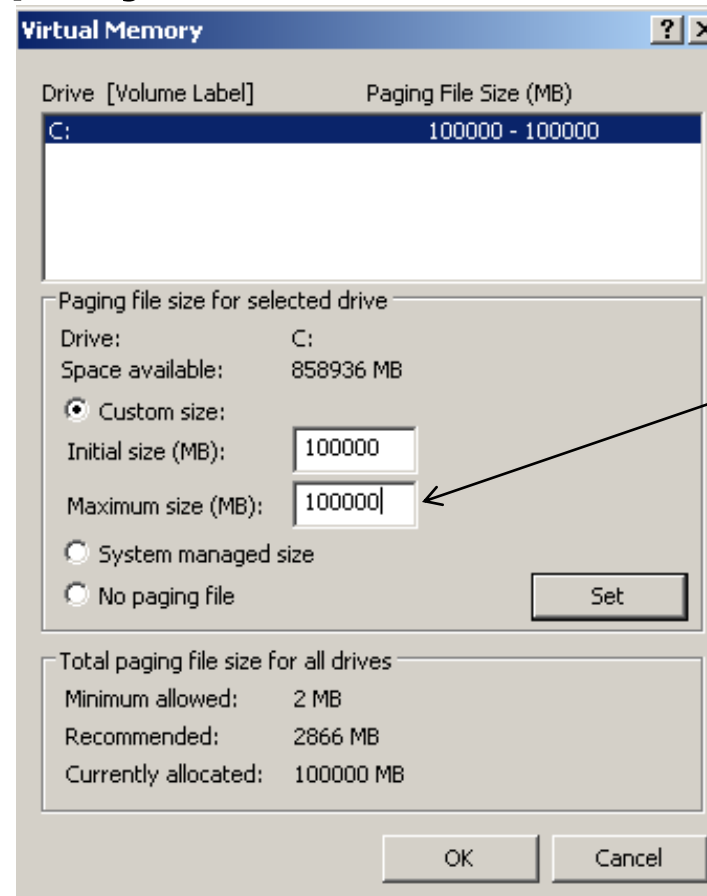
- Step 4i: Change the number in the “Initial size (MB)” box to a much larger value but do not exceed the “Space Available” value that is displayed. (We suggest 100000..)



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

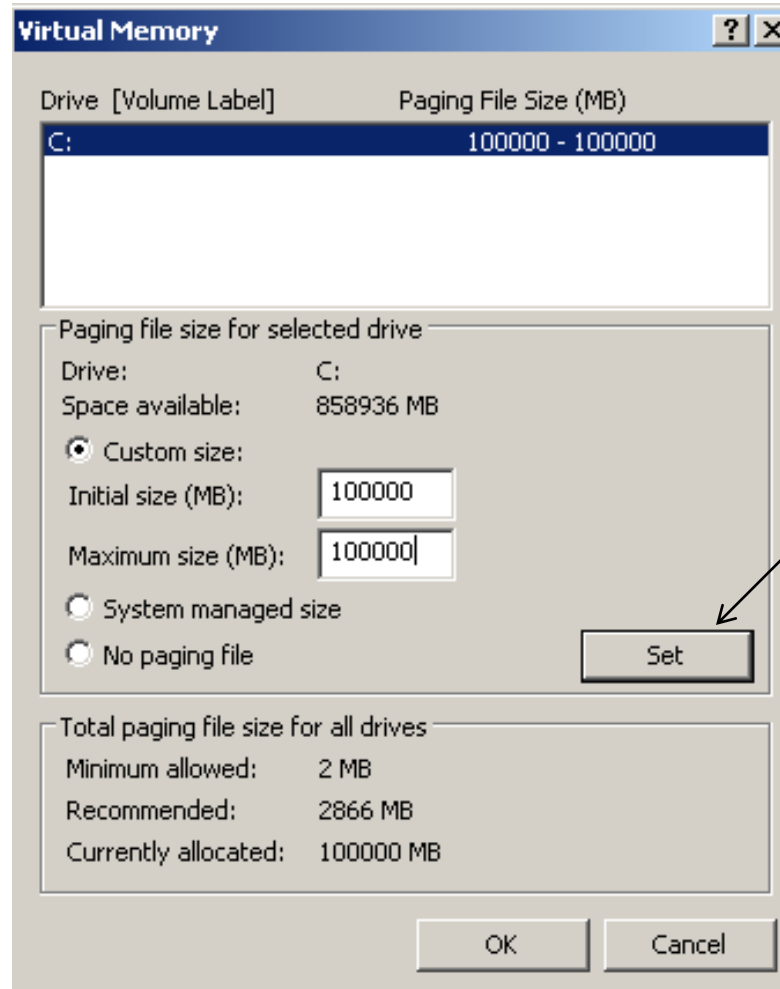
- Step 4j: Change the number in the “Maximum size (MB)” box to the same number that you used in “Step 4j”.



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

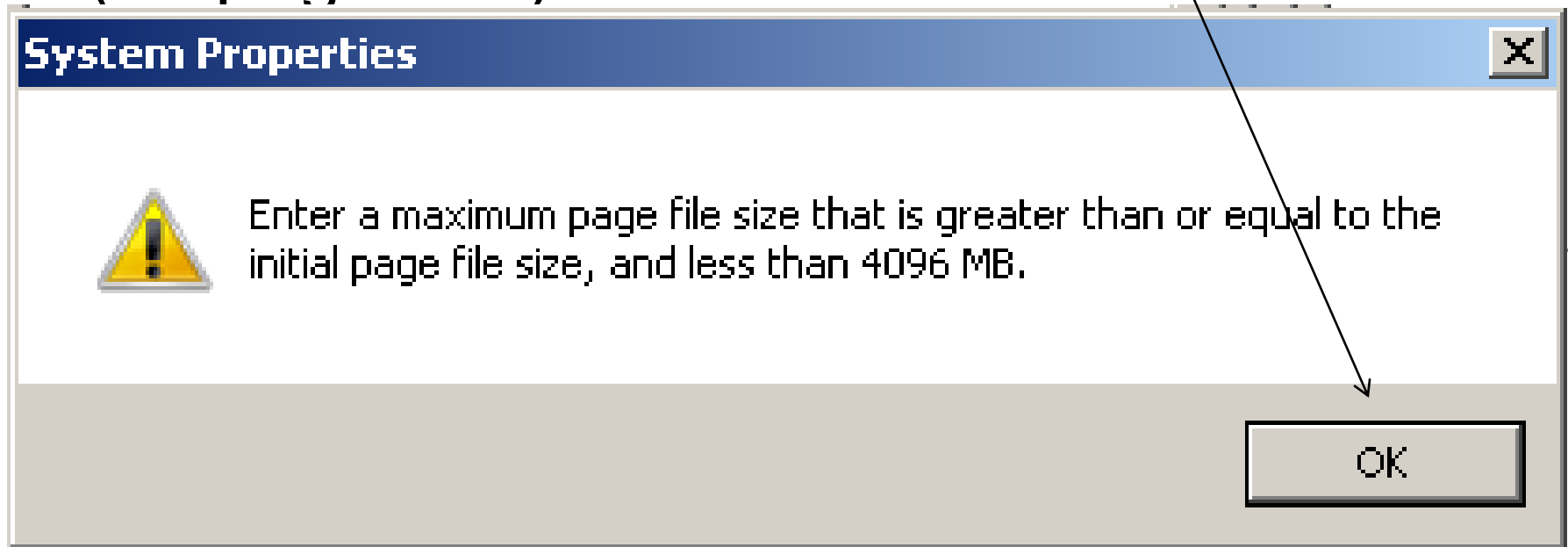
- Step 4k: Click on “Set” button in the “Virtual Memory” box.



## DETAILS OF STEP 4:

### Supersize the Swap File (continued)

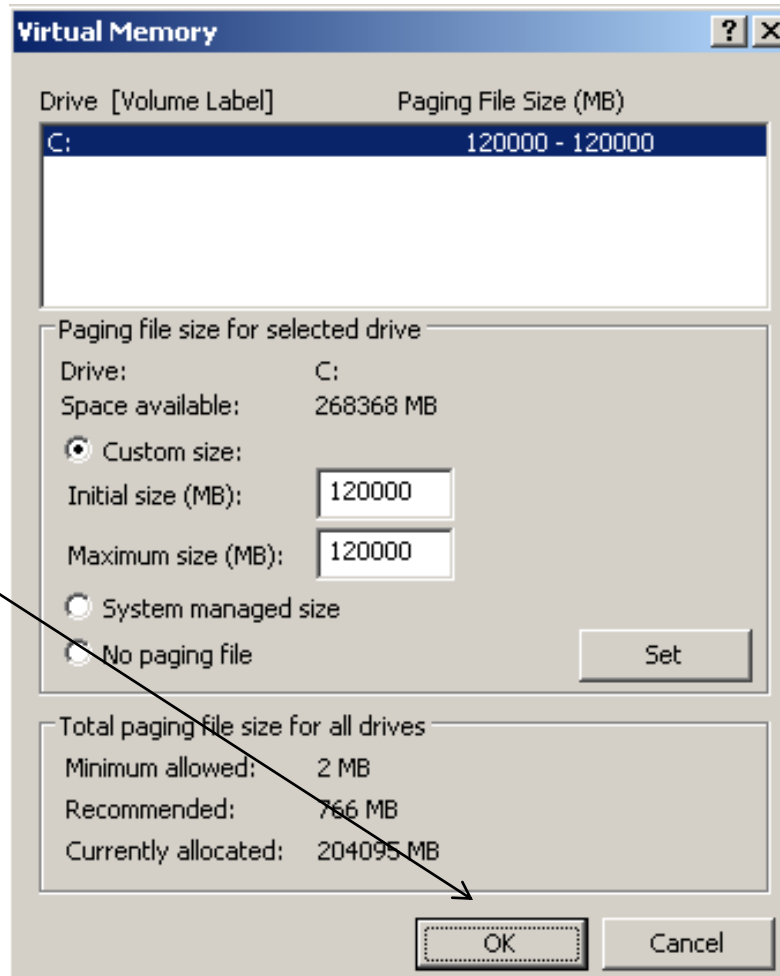
- Step 4L: If a "System Properties" box states that you have to set the maximum page file size below 4096, click on its "OK" button and go immediately to **Step 4t** in "**Appendix 1**" (on page 100):



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

- Step 4m: Click on the “OK” button of the “Virtual Memory” box to make it disappear:



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

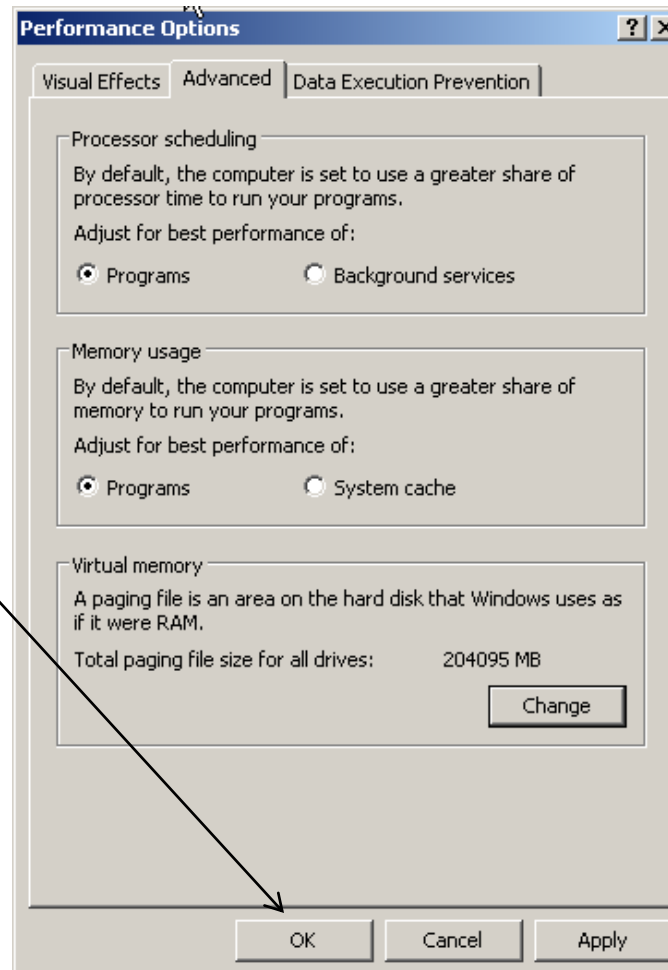
- Step 4n: If a "System Control Panel Applet" box states that you have to "..restart your computer..", click on its "OK" button to make this box disappear:



# DETAILS OF STEP 4:

## Supersize the Swap File (continued)

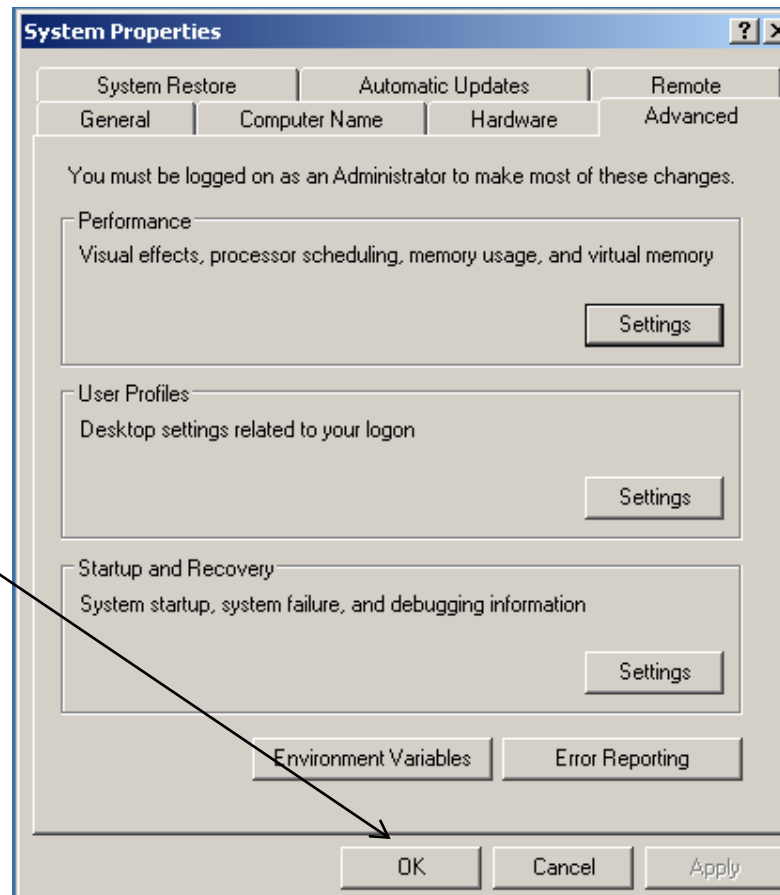
- Step 4o: Click on the “OK” button of the “Performance Options” box to make it disappear:



# DETAILS OF STEP 4:

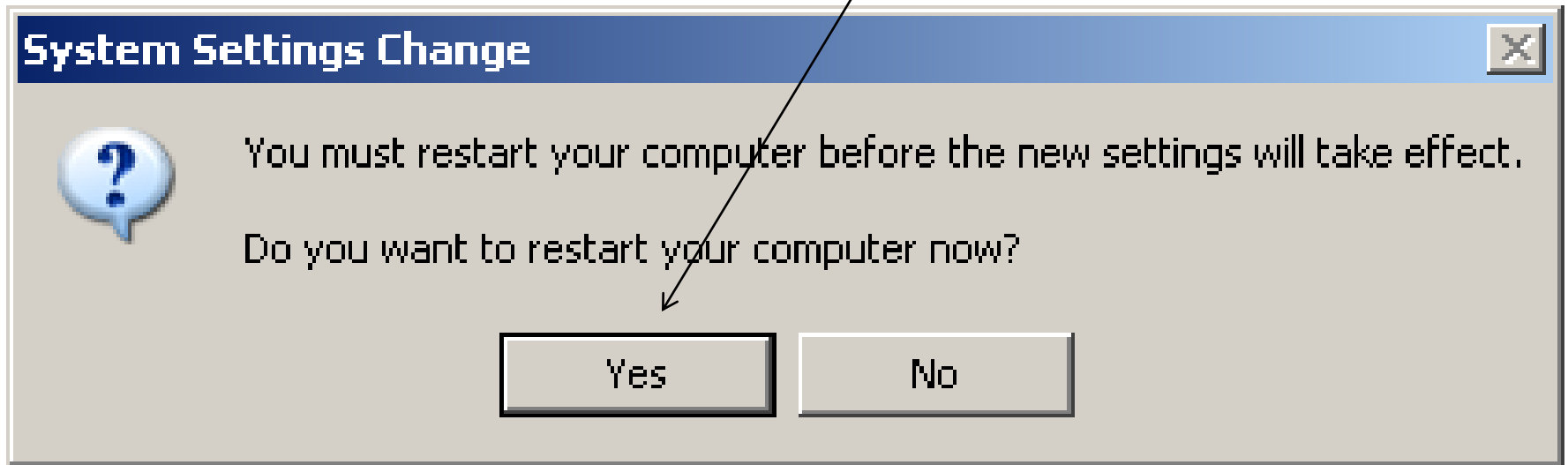
## Supersize the Swap File (continued)

- Step 4p: Click on the “OK” button of the “System Properties” box to make it disappear:



# DETAILS OF STEP 4: Supersize the Swap File

- Step 4q: If a “System Settings Change” box states that “You must restart your computer..”, click on its “Yes” button:



## **DETAILS OF STEP 4: Supersize the Swap File**

- **Step 4r: After your computer reboots, use your Web browser and other software application programs to see if your computer is significantly faster than prior to the performance of this procedure.**

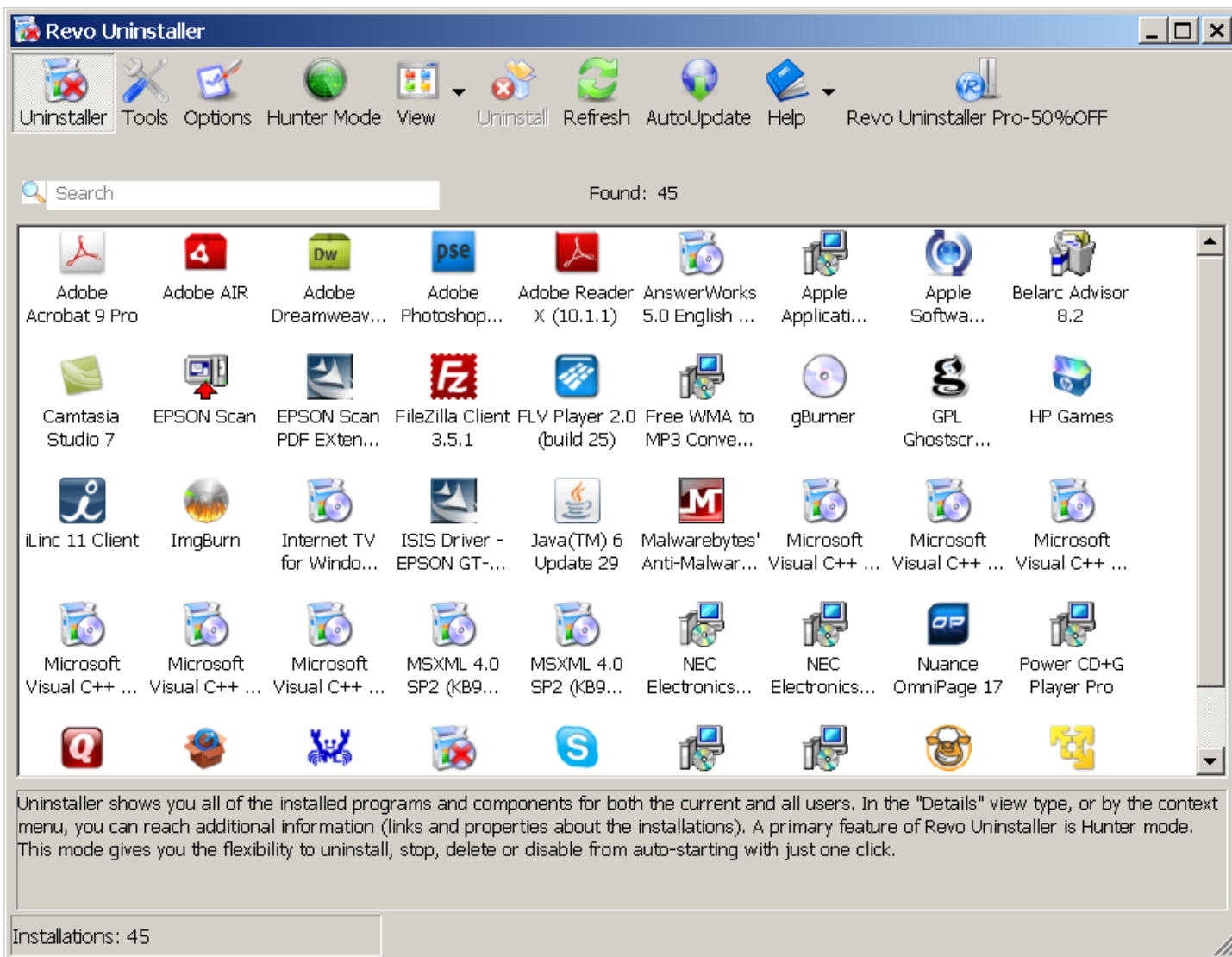
# DETAILS OF STEP 4: Supersize the Swap File

- Step 4s: If your computer is not significantly faster, perform Step 4a through Step 4r, and try a larger minimum and maximum swap file size in "Step 4i" and "Step 4j".

## DETAILS OF STEP 5: Run “Revo Uninstaller Freeware”

- Run “Revo Uninstaller Free” to remove unwanted toolbars, updaters, and miscellaneous software programs.
- See [http://www.revouninstaller.com/revo\\_uninstaller\\_free\\_download.html](http://www.revouninstaller.com/revo_uninstaller_free_download.html)

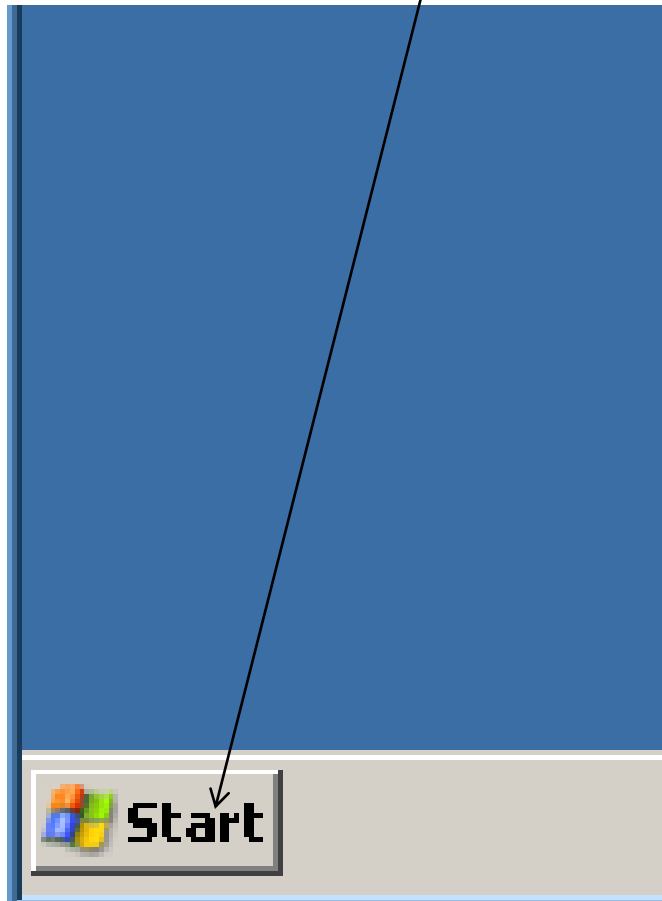
# DETAILS OF STEP 5: Run “Revo Uninstaller Freeware”



## DETAILS OF STEP 6:

**Use “services.msc” to disable some services**

- Step 5a: Click on the “Start” button which is located at the left or bottom of the gray “taskbar” in “Windows XP”:



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

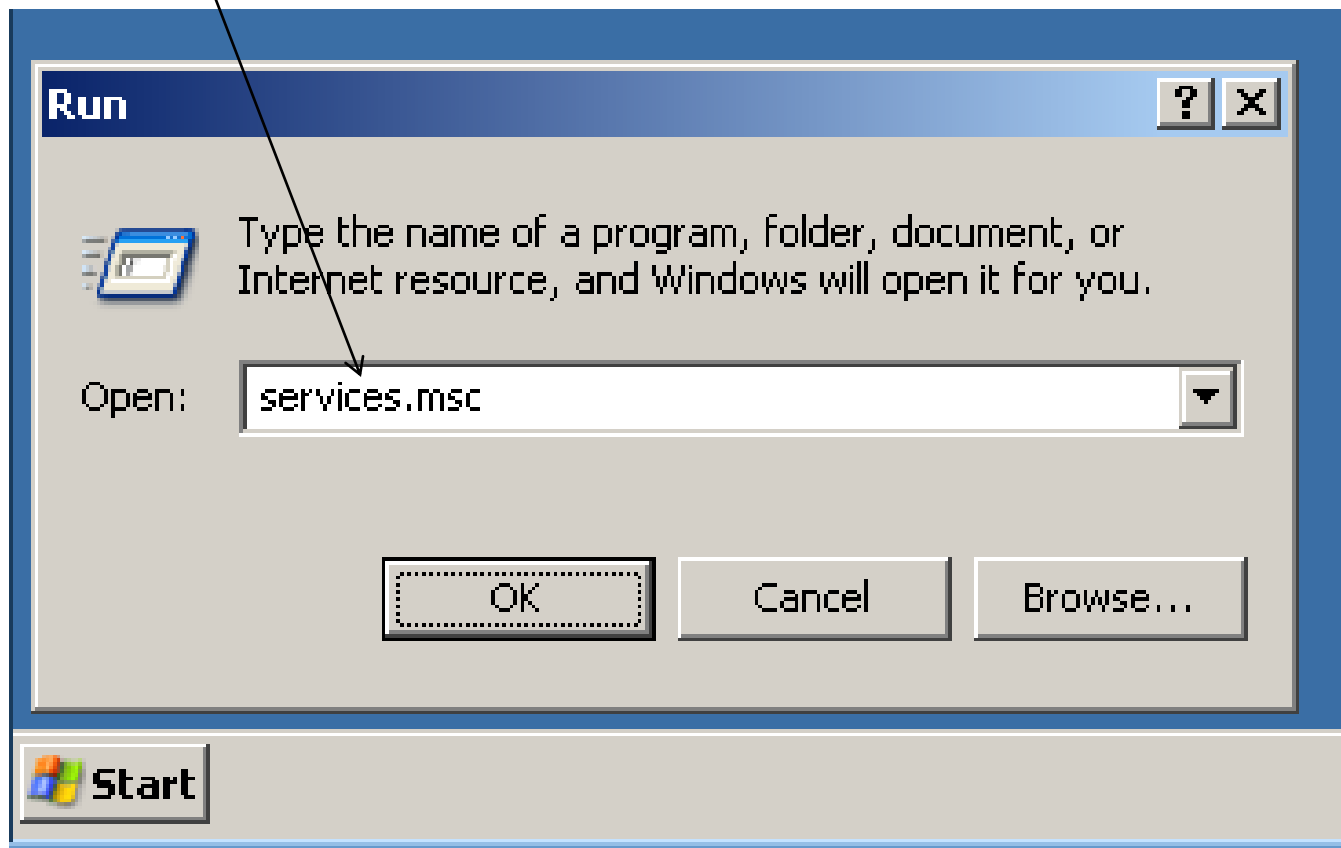
- Step 5b: Click on “Run..” in the “Start menu”.



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

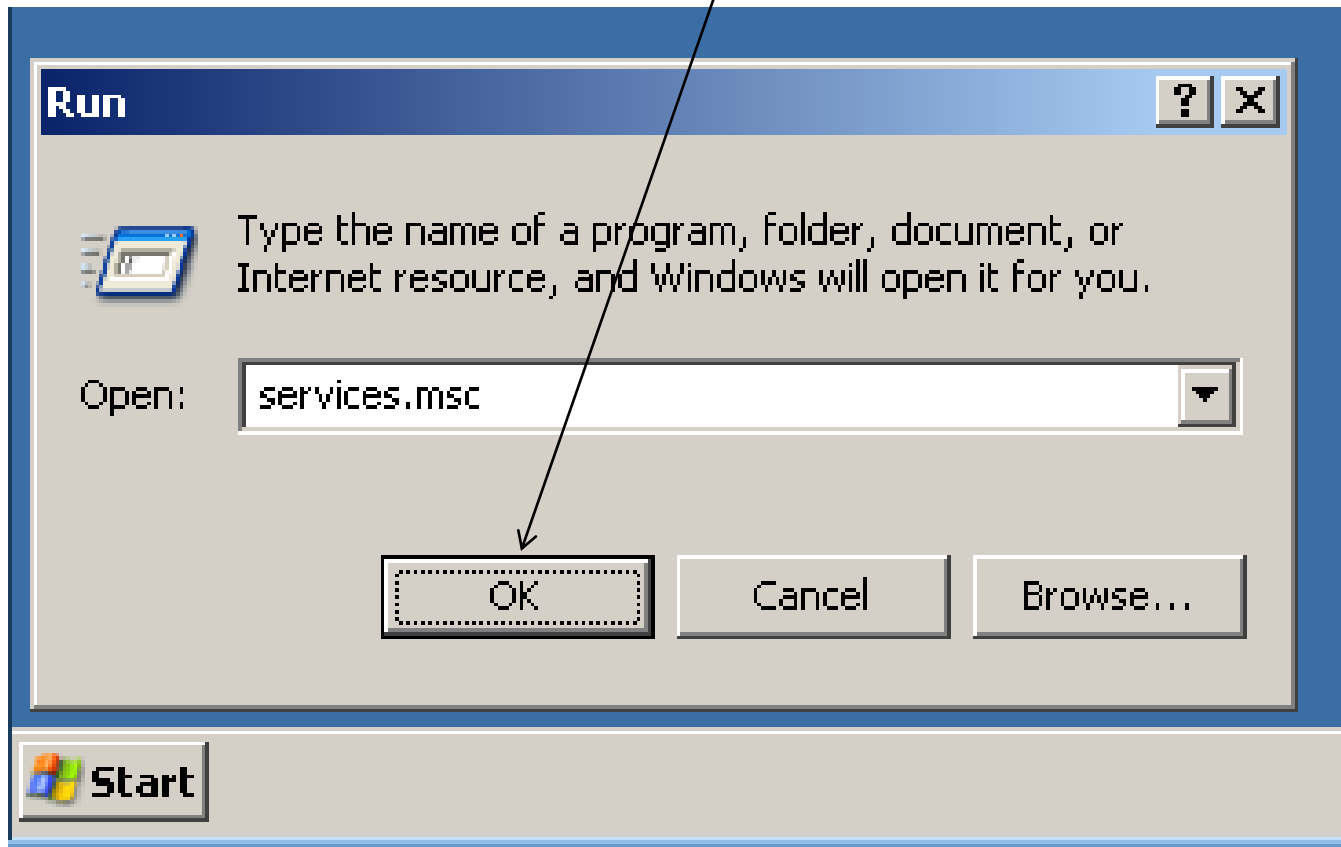
- Step 5c: Inside the "Run" box, type services.msc



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

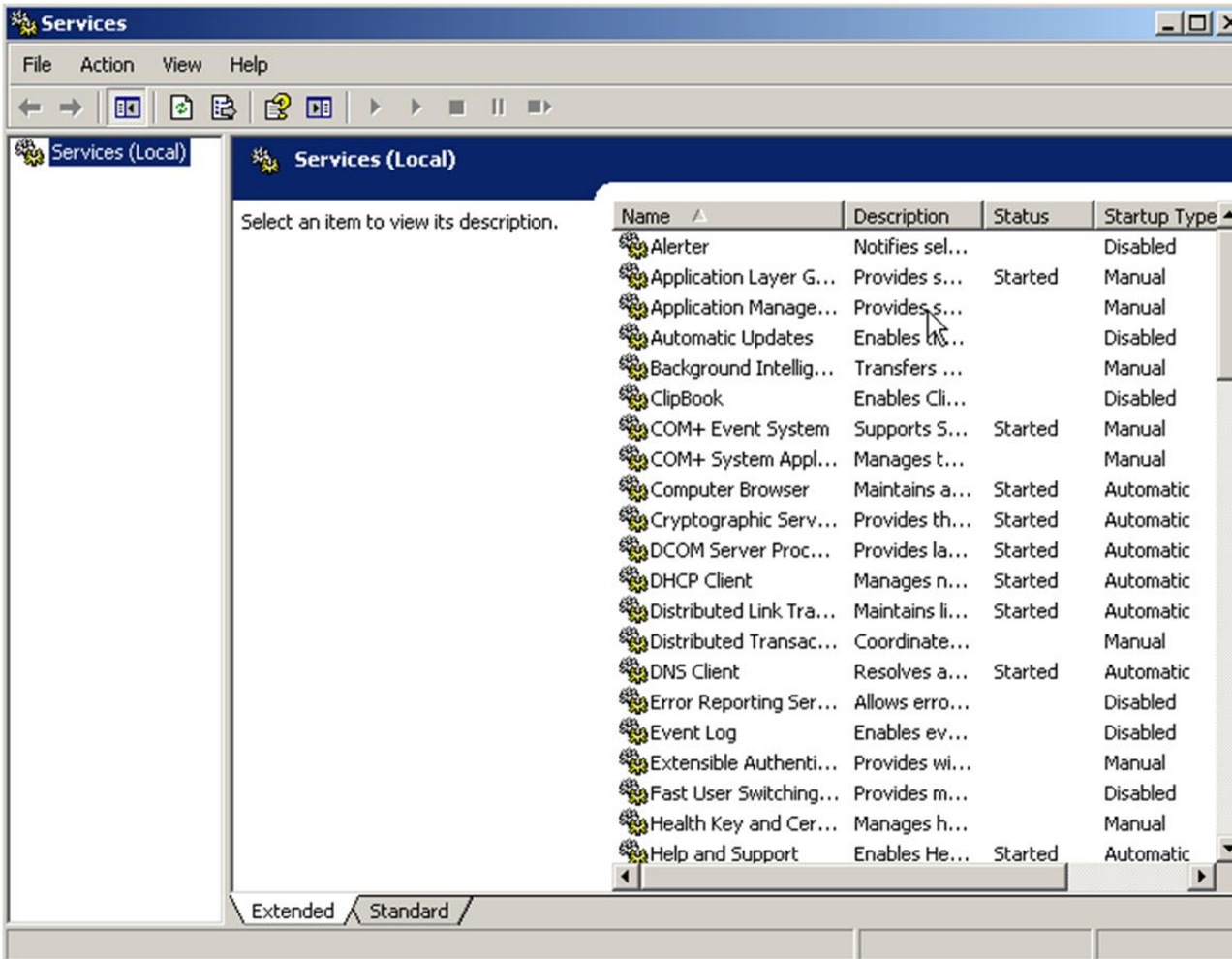
- Step 5d: Click on the “OK” button of the “Run box:



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

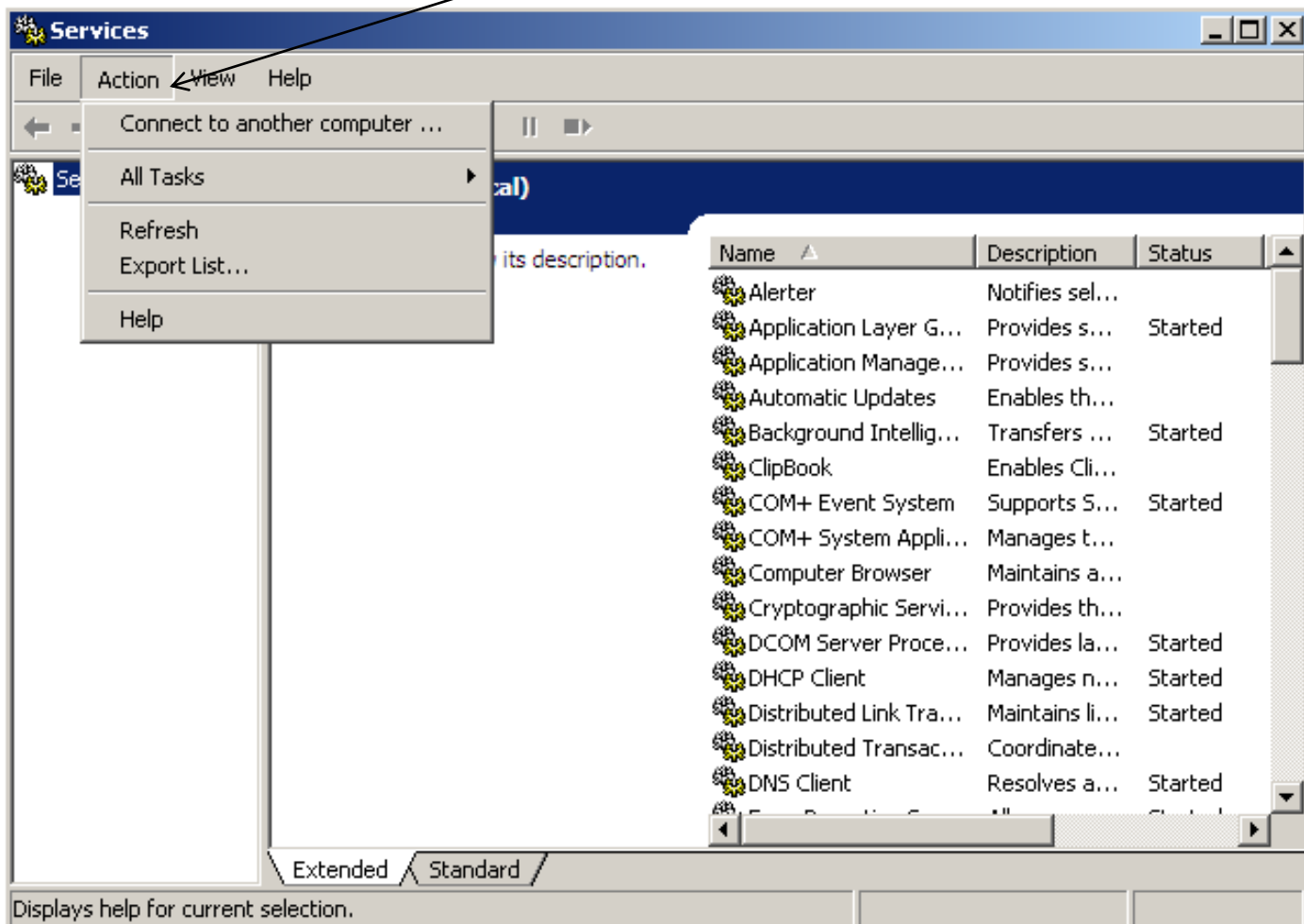
- Step 5e: A “Services” window will be displayed:



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

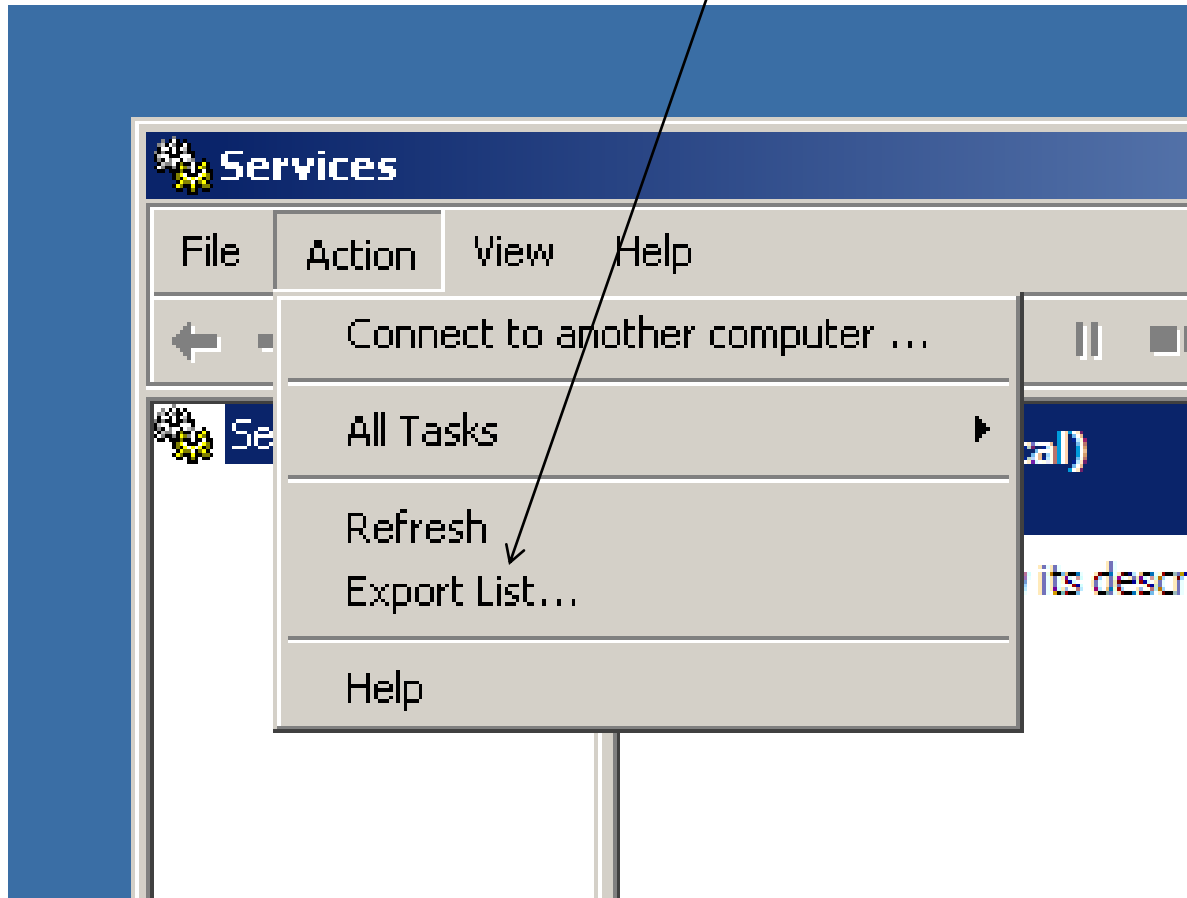
- Step 5f: Click on “Action” in the Menu bar



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

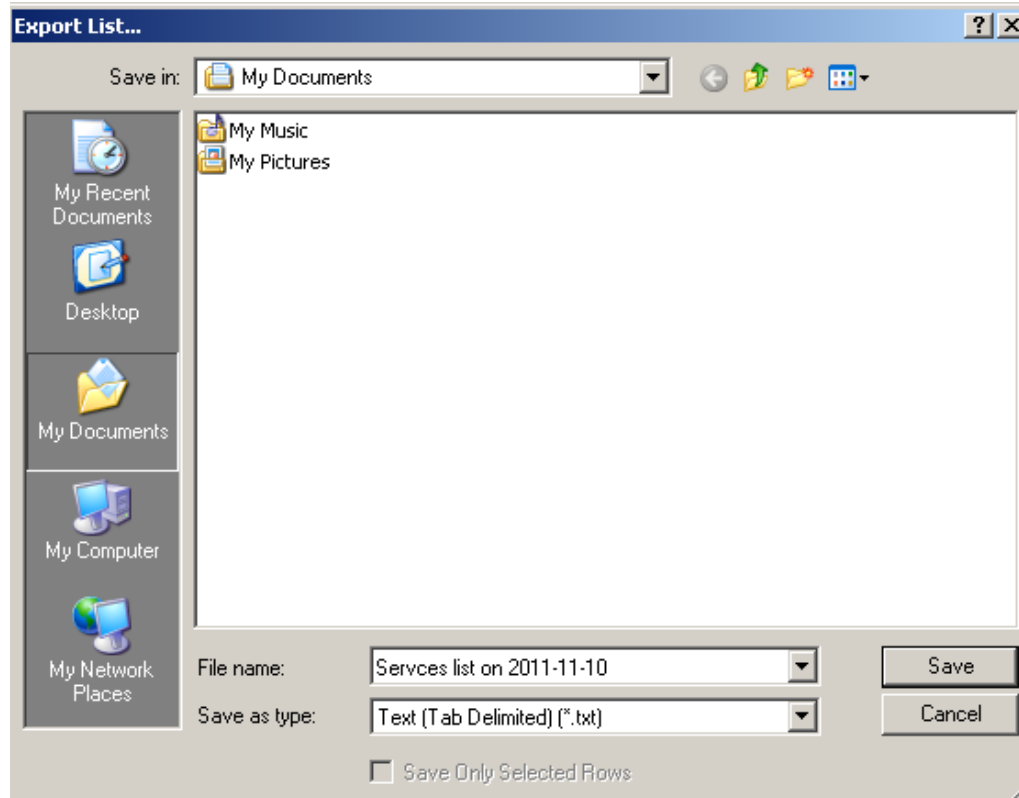
- Step 5g: Click on “Export List” in the pull-down menu.



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

- Step 5h: Use the "Export List.." box to save the “List Report” to a location in any hard drive, giving the report an appropriate name based on the time and date.



## DETAILS OF STEP 6:

### Use “services.msc”.. (continued)

- Step 5i: Stop and disable “services” that you do not need. (Do not make any changes to "Volume Shadow Copy" service or the "Power" service).
- Step 5j: For documentation on what you can stop and disable, see <http://www.makeuseof.com/tag/winhack-speed-up-your-computer-part-1/> and

## DETAILS OF STEP 6:

Use “services.msc” .. (continued)

and

<http://www.techknowl.com/disable-unwanted-services-and-speed-up.html>

and

<http://www.techduke.com/2007/06/20/windows-services-background-processes-explained/>

and

## **DETAILS OF STEP 6:**

**Use “services.msc”.. (continued)**

and

<http://www.ss64.com/nt/syntax-services.html>

and

<http://www.governmentsecurity.org/forum/index.php?showtopic=1480>

and

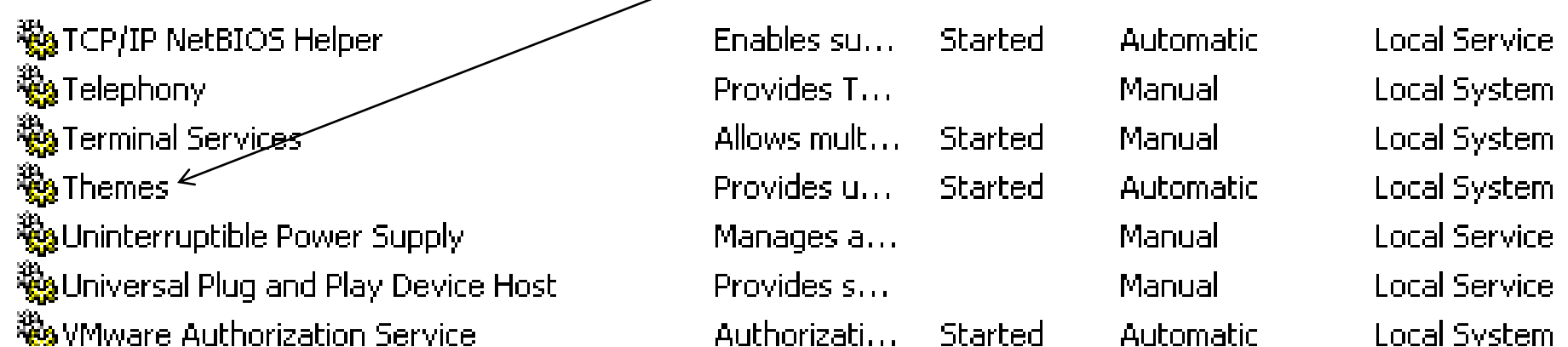
<http://www.blackviper.com/2008/05/19/black-vipers-windows-xp-x86-32-bit-service-pack-3-service-configurations/>

# DETAILS OF STEP 6:

## Use "services.msc".. (continued)

For example, to stop and disable the "Themes" service, do the following inside the "Services" box:

Example Step 1: Locate the "Themes" service:

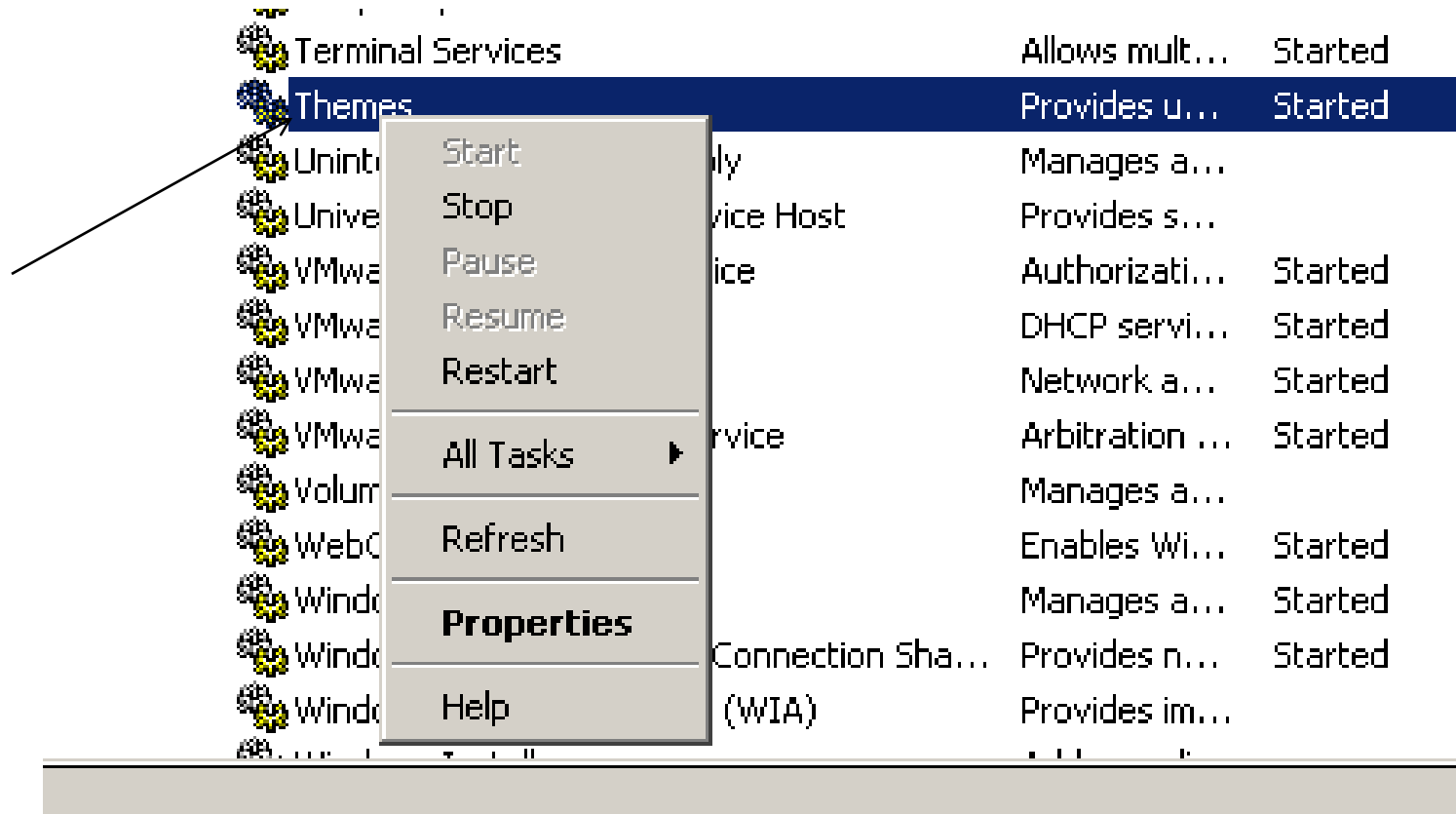


TCP/IP NetBIOS Helper	Enables su...	Started	Automatic	Local Service
Telephony	Provides T...		Manual	Local System
Terminal Services	Allows mult...	Started	Manual	Local System
Themes	Provides u...	Started	Automatic	Local System
Uninterruptible Power Supply	Manages a...		Manual	Local Service
Universal Plug and Play Device Host	Provides s...		Manual	Local Service
VMware Authorization Service	Authorizati...	Started	Automatic	Local System

# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

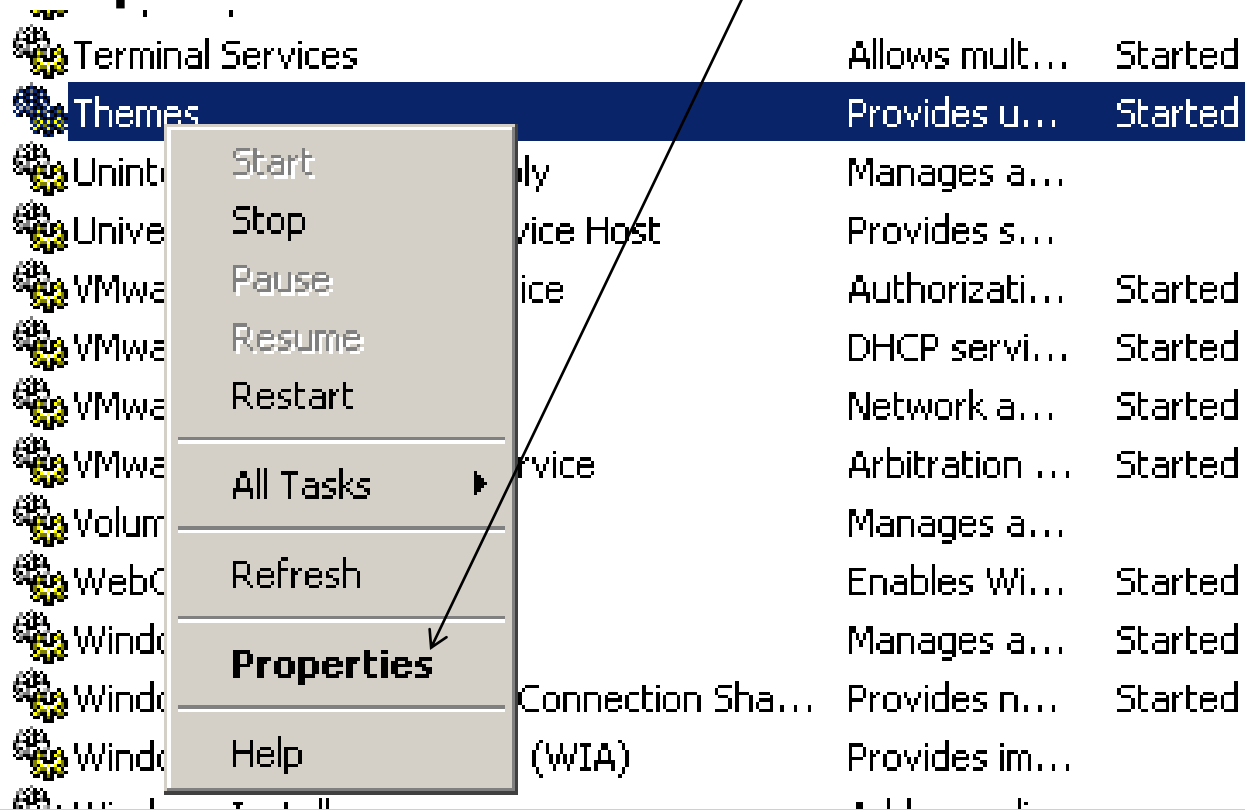
Example Step 2: Use your RIGHT mouse button to click on the "Themes" service:



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

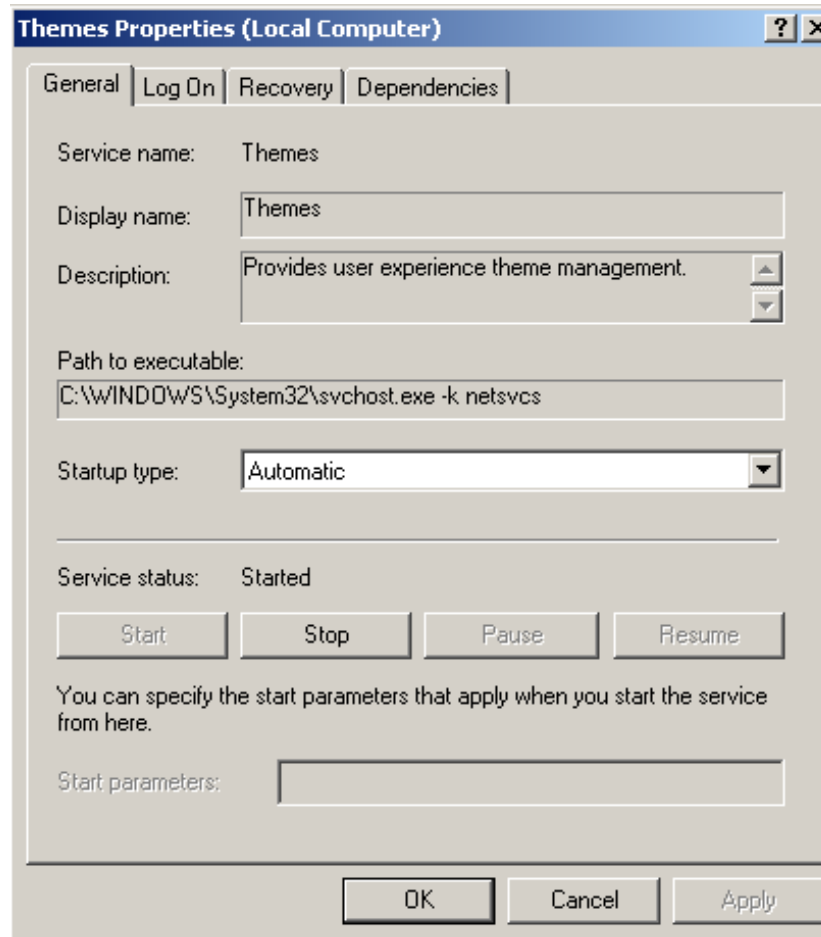
Example Step 3: Click on "Properties" in the pop-up context menu:



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

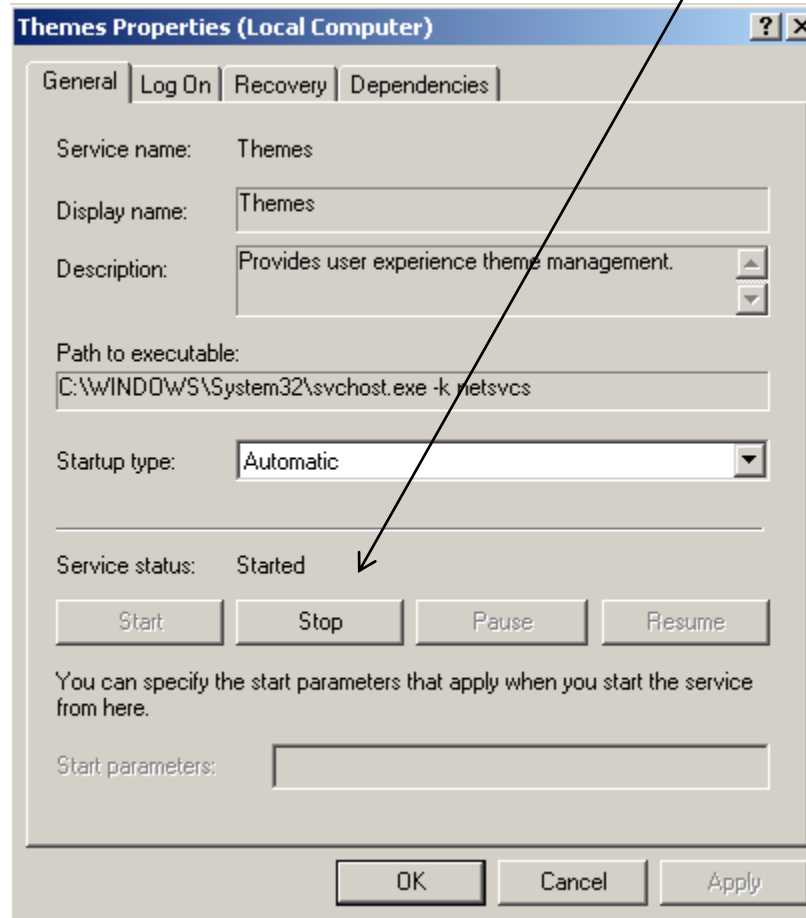
Example Step 4: A "Themes Properties" box will be displayed:



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

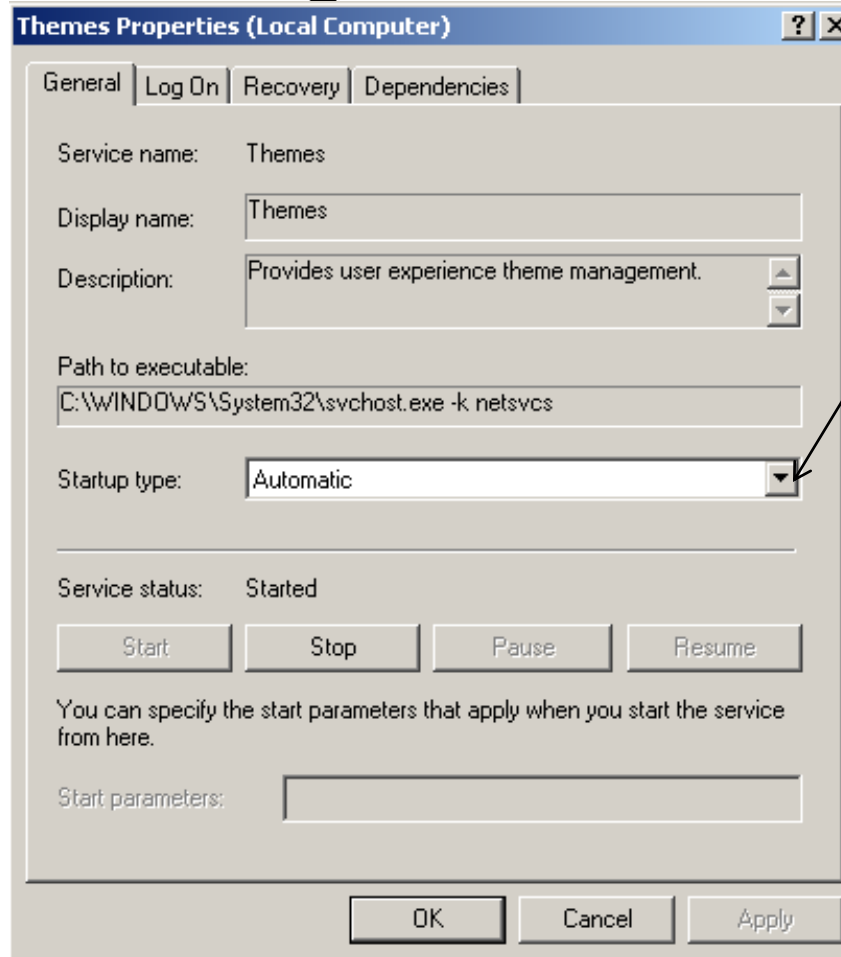
Example Step 5: Click on the "Stop" button to stop the "Themes" service:



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

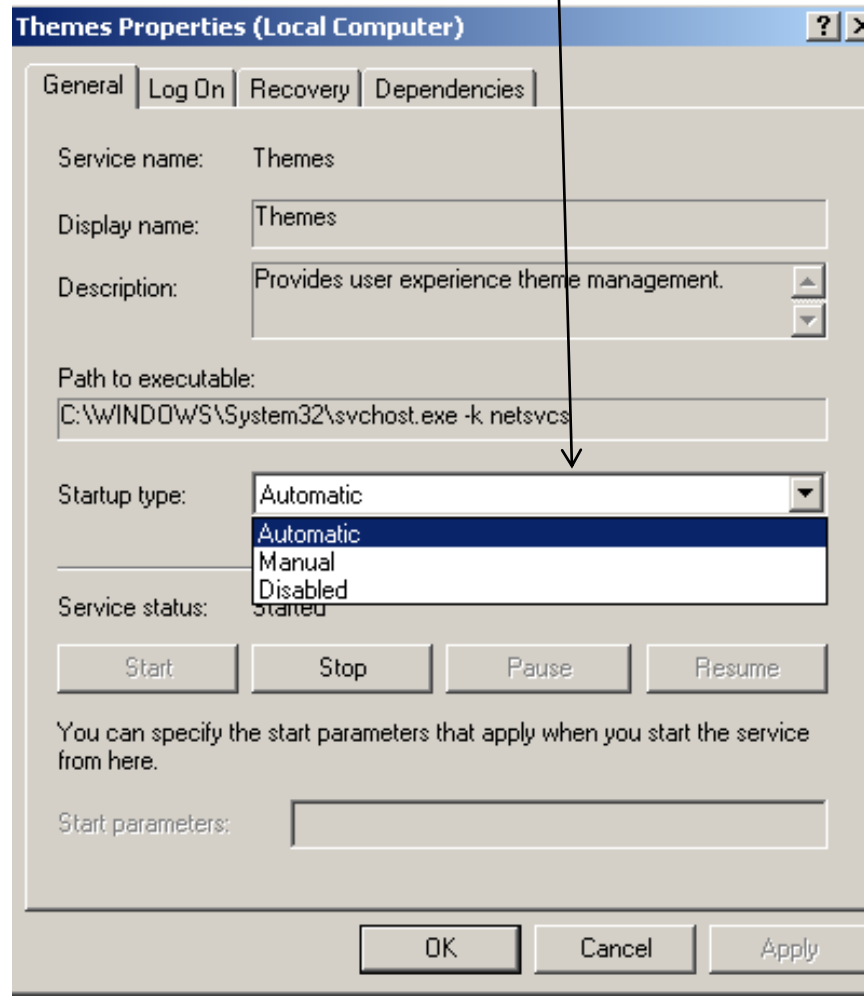
Example Step 6: Click on drop-down list button to the right of "Automatic"::



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

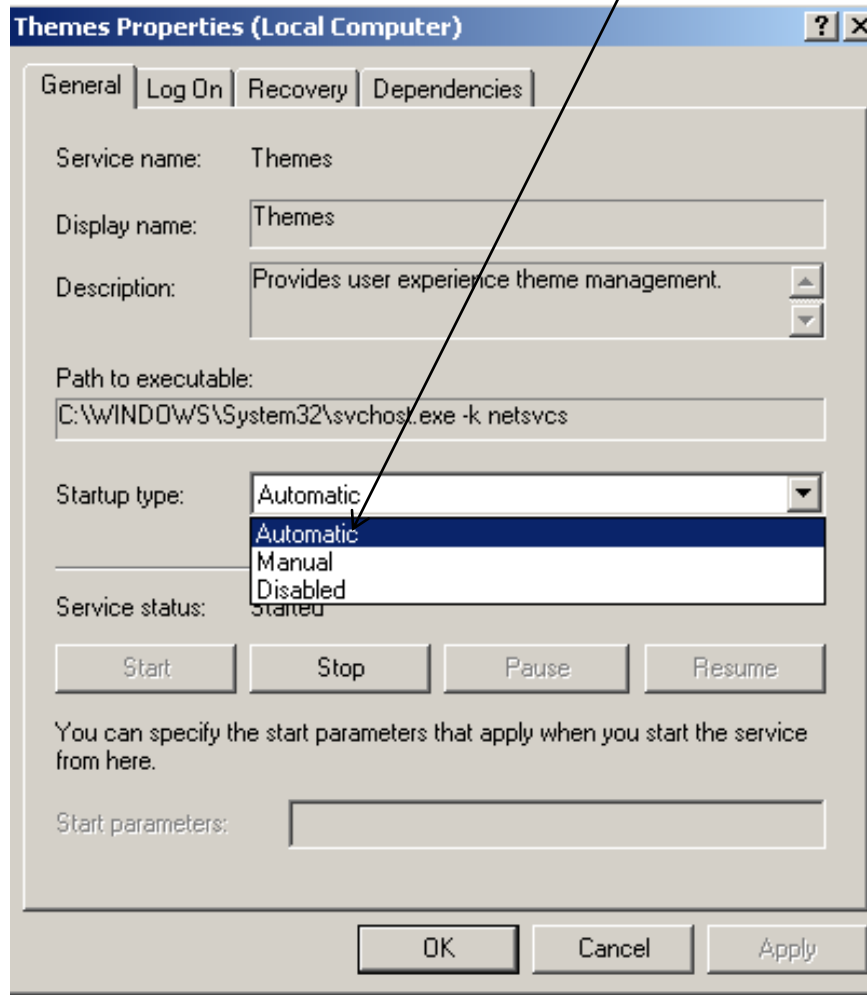
Example Step 7: A drop-down list will be displayed:



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

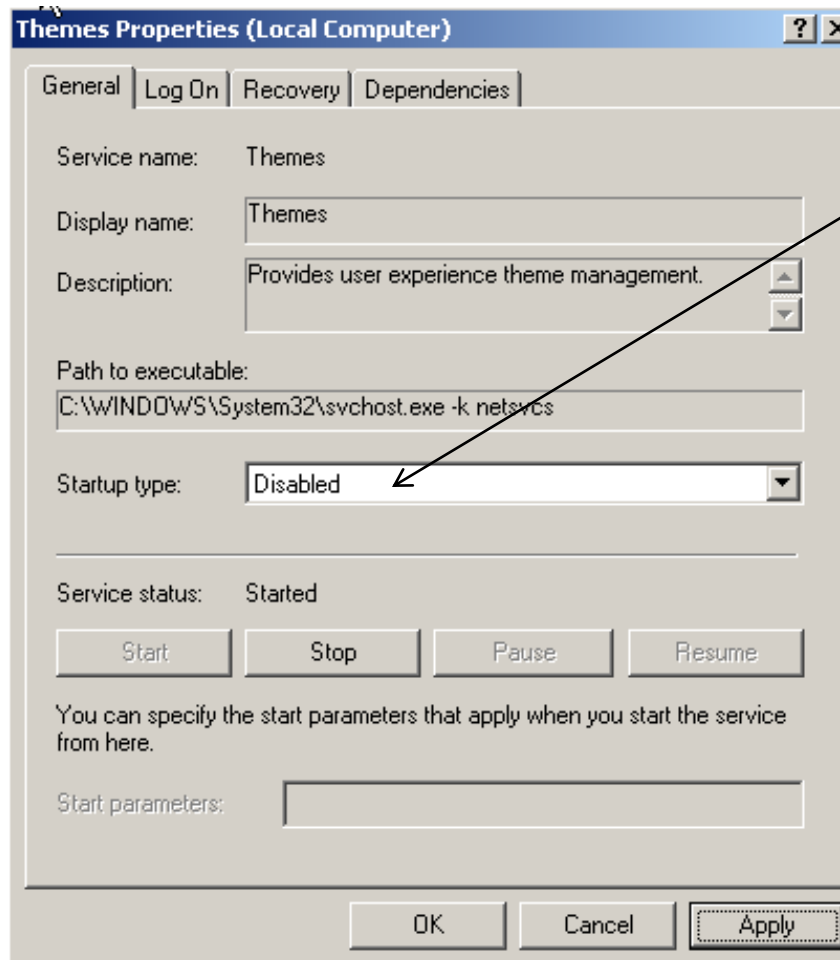
Example Step 8: Click on "Disabled" in the drop-down list:



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

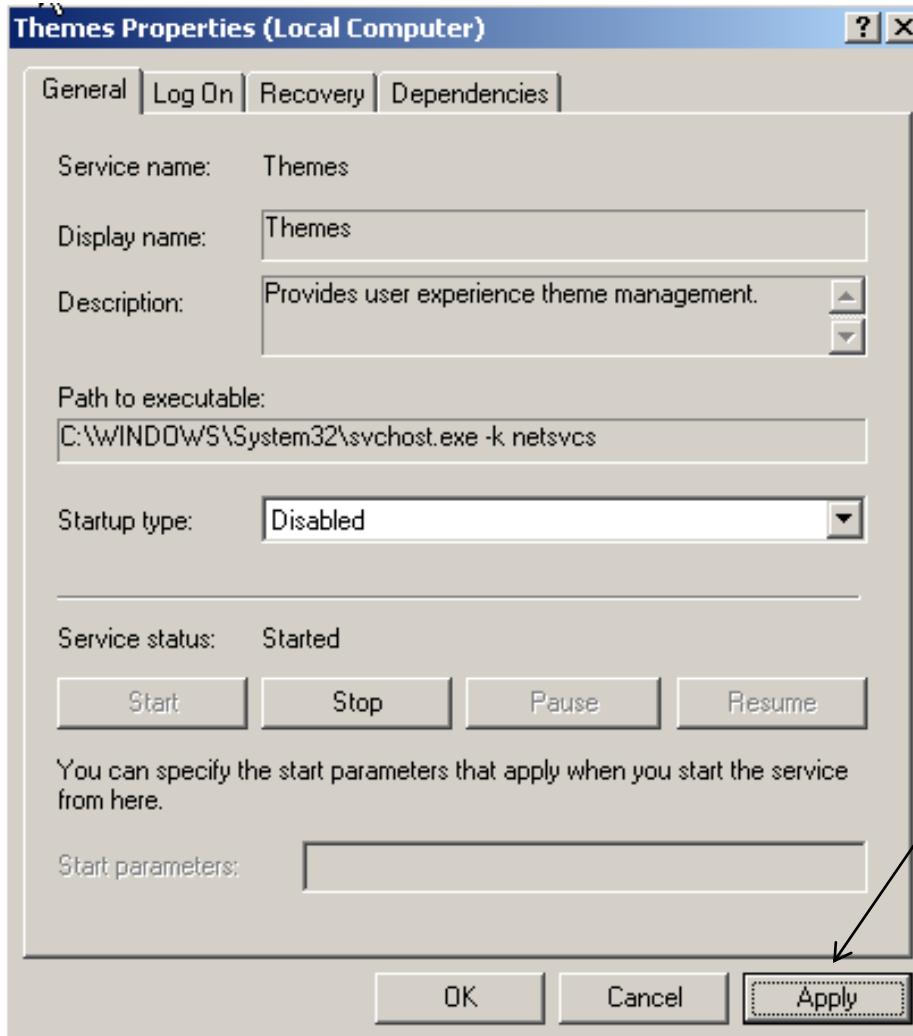
Example Step 9: "Startup type" will now be shown as "Disabled":



# DETAILS OF STEP 6:

Use “services.msc”.. (continued)

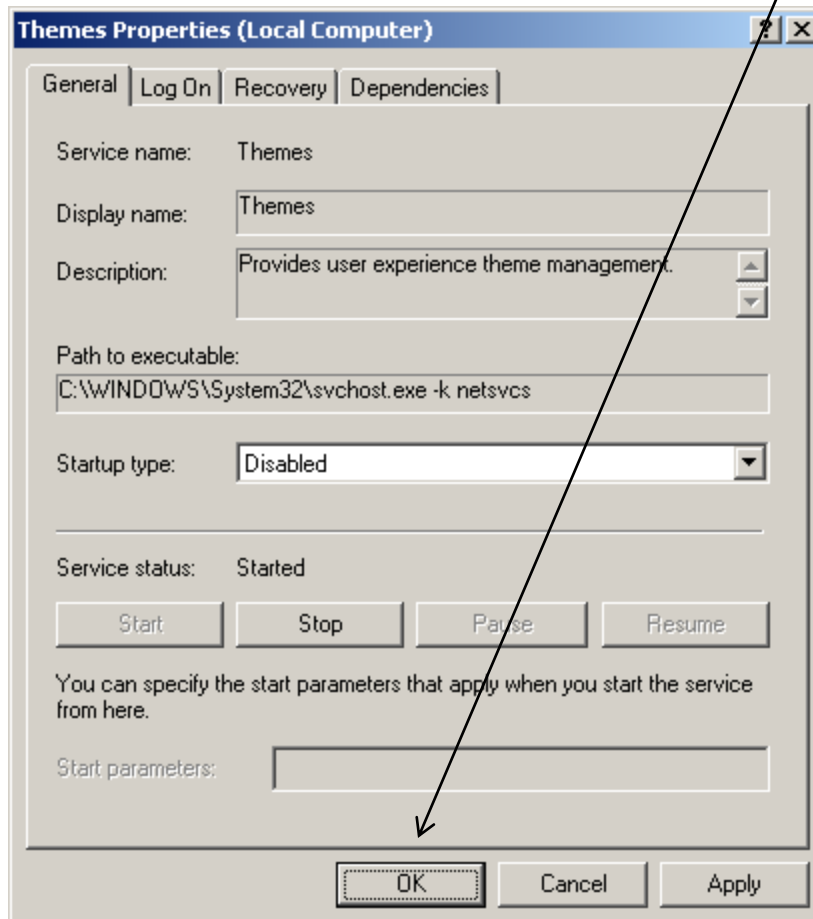
Example Step 10: Click on the "Apply" button:



# DETAILS OF STEP 6:

## Use “services.msc”.. (continued)

Example Step 11: Click on the "OK" button to make the “..Properties..” box disappear:



## DETAILS OF STEP 6:

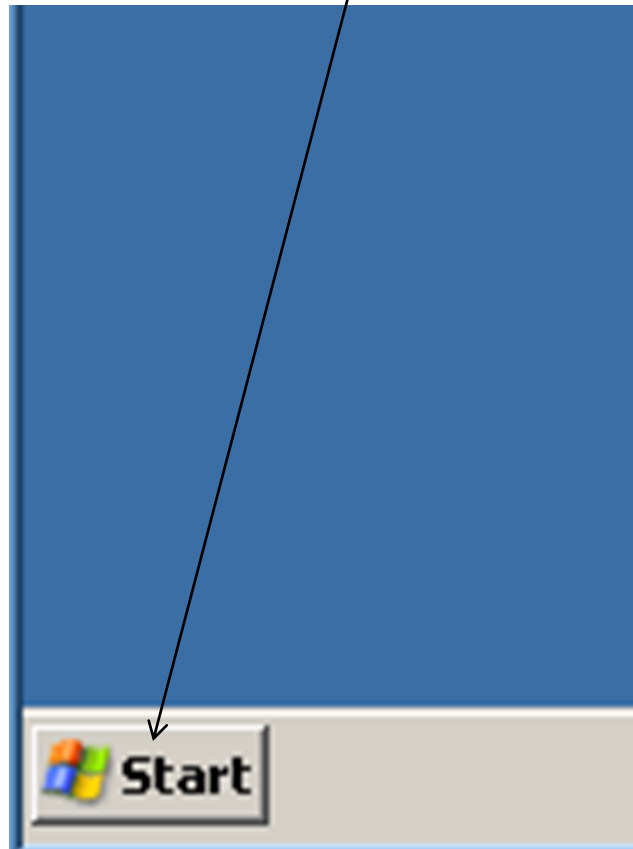
Use “services.msc”.. (continued)

- Extended view versus standard view of services.msc "Microsoft Management Console" snap-in
  - See <http://www.winhelponline.com/blog/configure-services-mmc-to-open-in-standard-view-by-default/>

# DETAILS OF STEP 7:

## Error-checking on all hard drives

- Step 7a: Click on the “Start” button which is located at the left or bottom of the gray task bar in “Windows XP”:



# DETAILS OF STEP 7:

## Error-checking on all hard drives

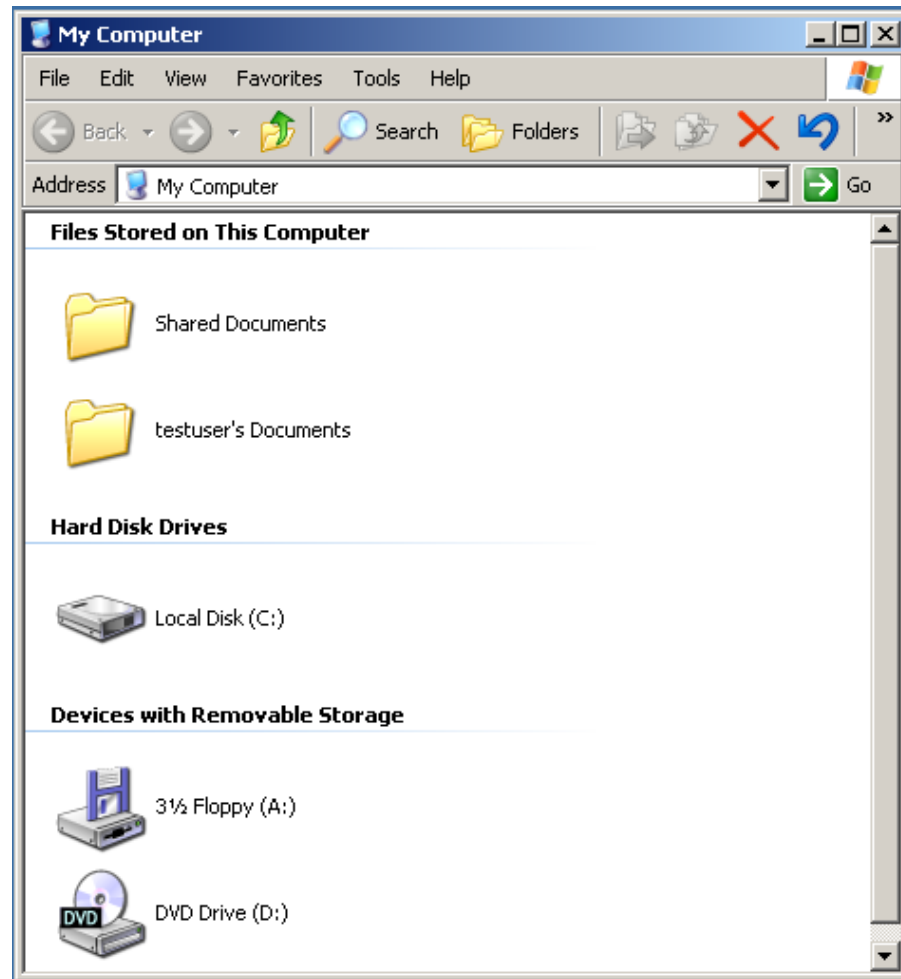
- Step 7b: Click on "My Computer" in the "Start menu":



# DETAILS OF STEP 7:

## Error-checking on all hard drives

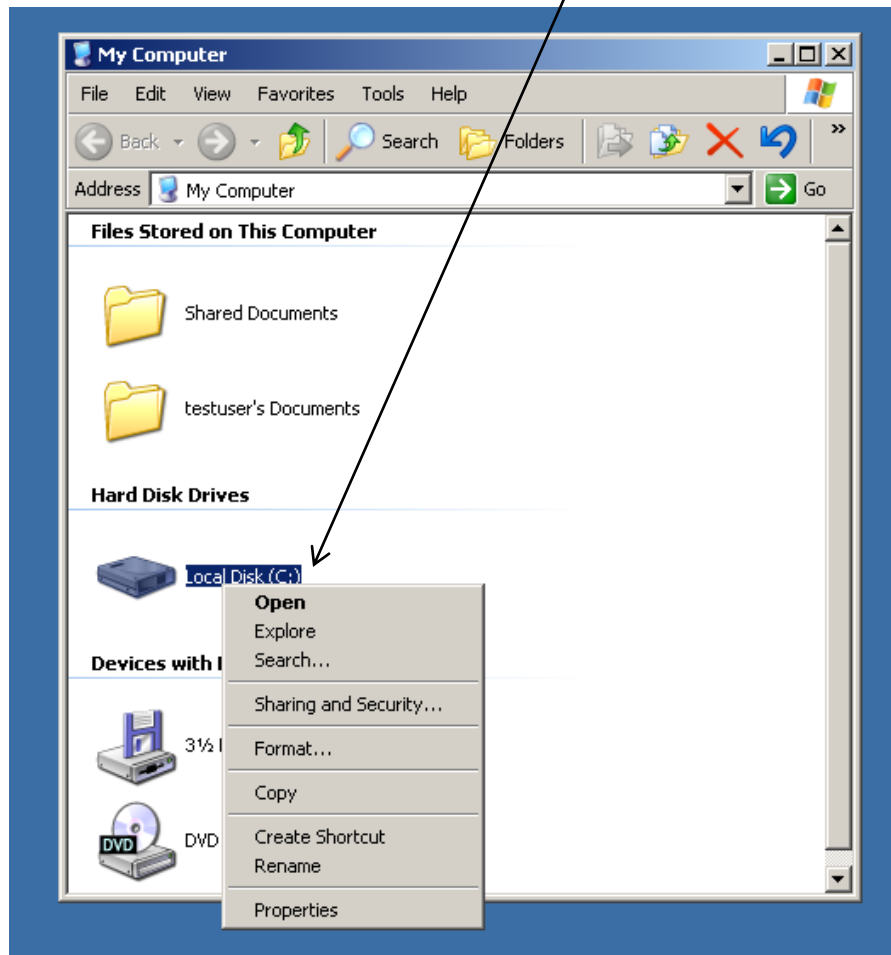
- Step 7c: A "Windows Explorer" window will be displayed:



# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

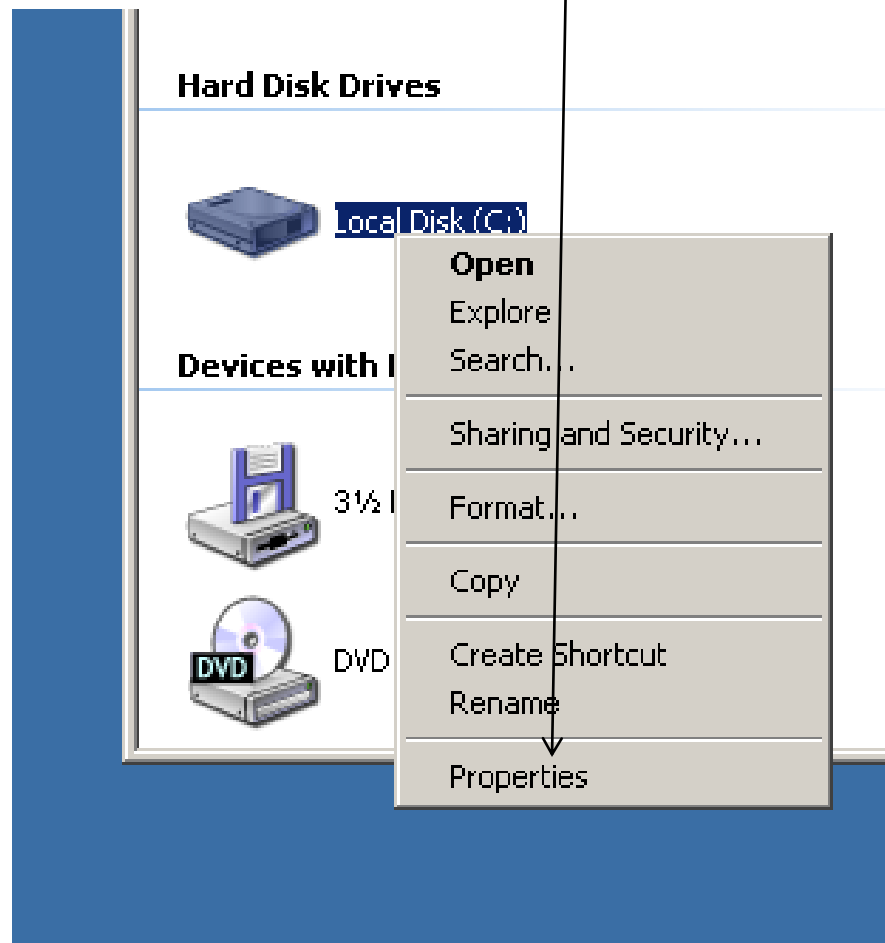
- Step 7d: Use the RIGHT mouse button to click on the C: drive:



# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

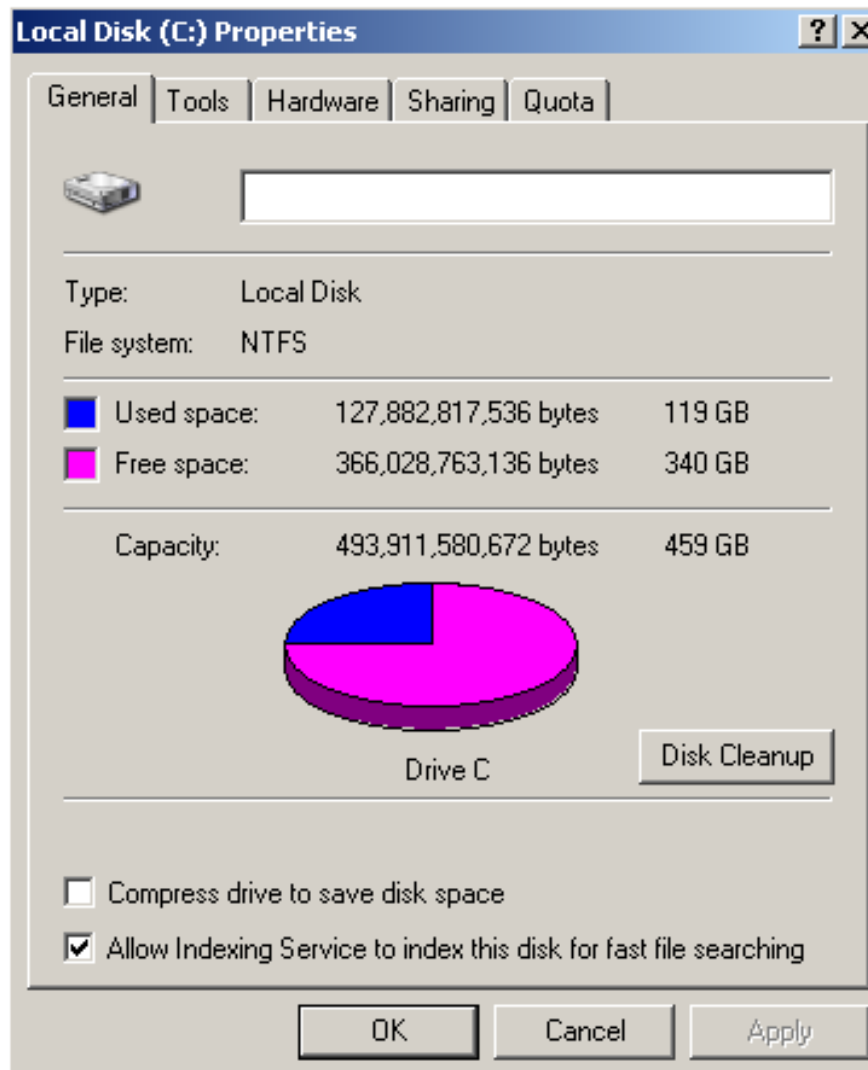
- Step 7e: Click on “Properties” on the pop-up context menu.



# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

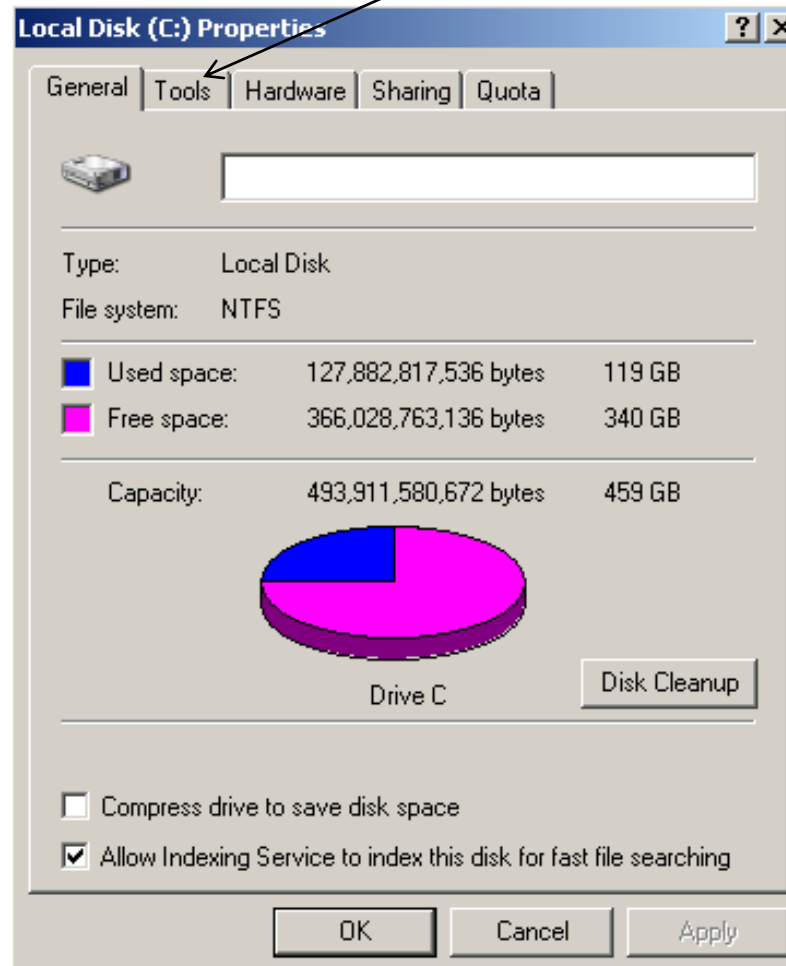
- Step 7f: A "..Properties" box will be displayed:



# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

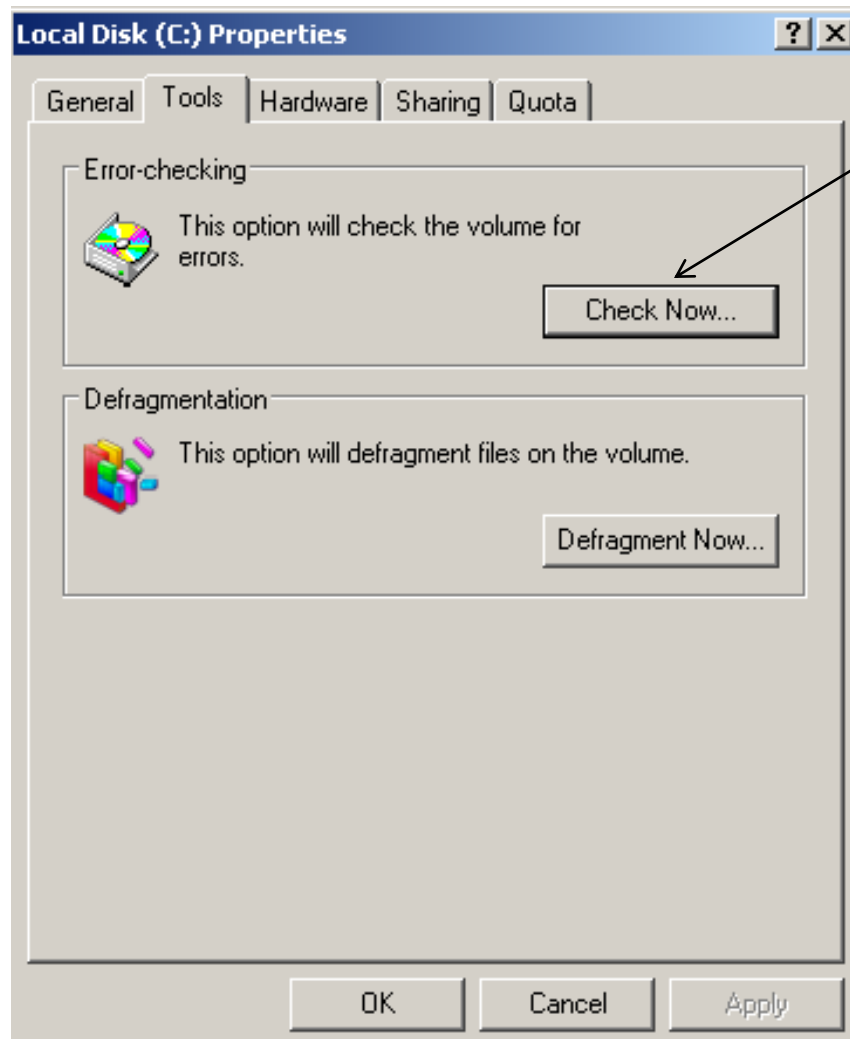
- Step 7g: Click on the "Tools" tab of the "Properties" box:



# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

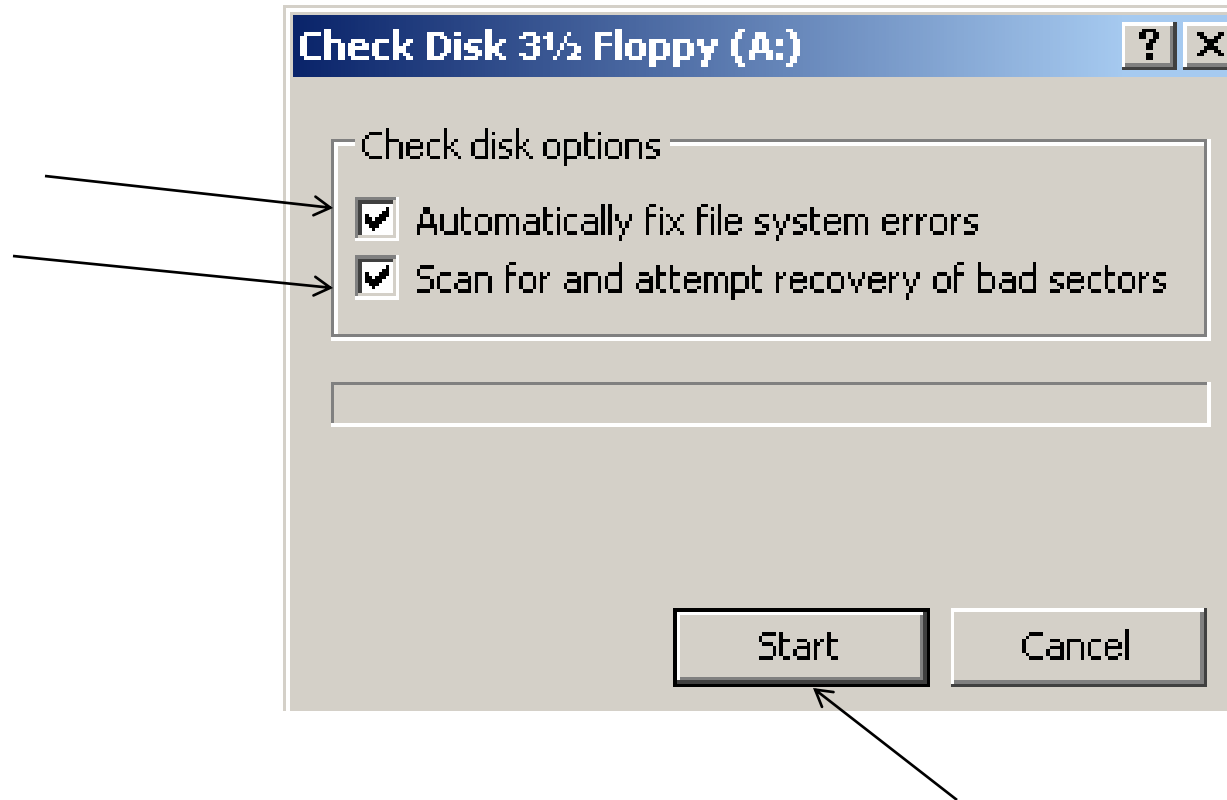
- Step 7h: Click on the “Check now...” button.



# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

- Step 7i: Select the two options:

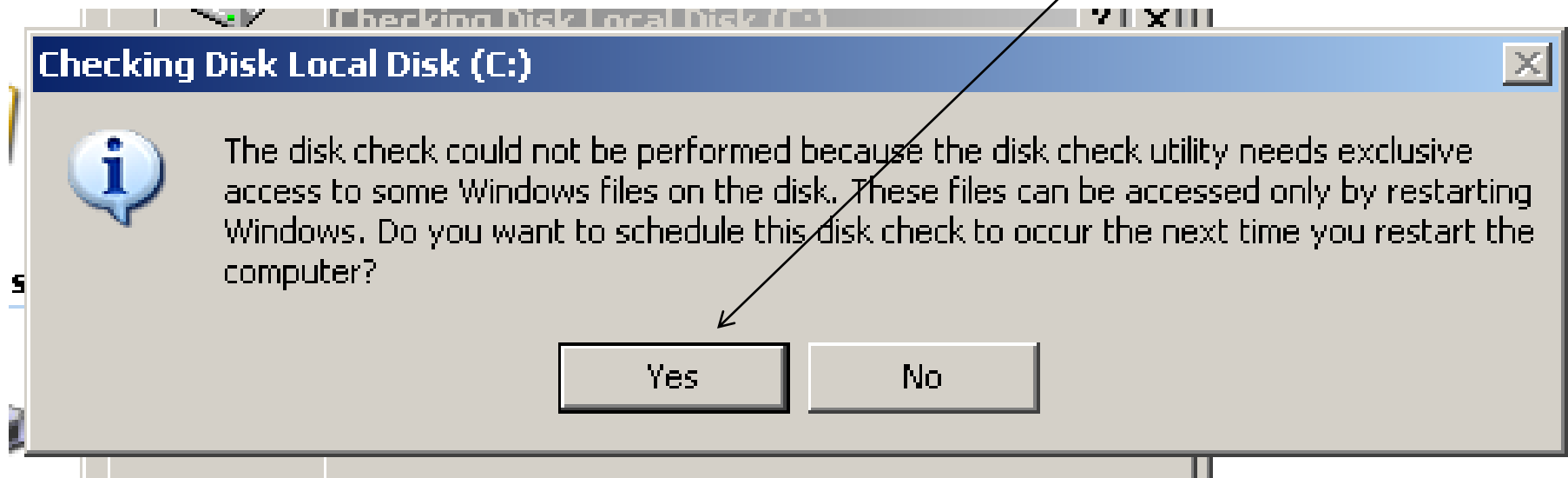


- Step 7j: Click on the “Start” button.

# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

- Step 7k: Click on the “Yes” button:



## **DETAILS OF STEP 7:**

### **Error-checking on all hard drives (continued)**

- **Step 7L: Reboot the computer.**

# DETAILS OF STEP 7:

## Error-checking on all hard drives (continued)

- Step 7m: A “chkdsk /f” will run during the startup of “Windows XP”:



```
Checking file system on C:  
The type of the file system is NTFS.
```

```
A disk check has been scheduled.  
windows will now check the disk.
```

```
CHKDSK is verifying files (stage 1 of 5)...  
File verification completed.  
CHKDSK is verifying indexes (stage 2 of 5)...  
Index verification completed.  
CHKDSK is verifying security descriptors (stage 3 of 5)...  
Security descriptor verification completed.  
CHKDSK is verifying file data (stage 4 of 5)...  
0 percent completed.
```

## DETAILS OF STEP 7:

### Error-checking on all hard drives (continued)

- See <http://support.microsoft.com/kb/315265>

## DETAILS OF STEP 8:

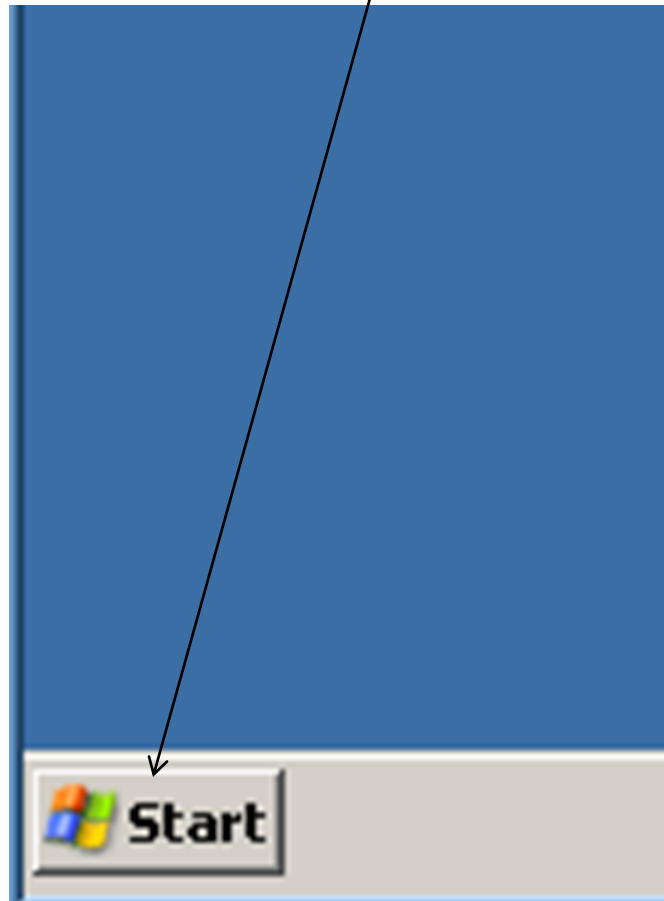
### Defragment the Windows Swap File

- Use Microsoft's free "pagedefrag" software utility.
  - See <http://technet.microsoft.com/en-us/sysinternals/bb897426>
  - It only works for "Windows XP" and earlier versions of "Windows.."

# DETAILS OF STEP 9:

## Defragment all hard drives

- Step 9a: Click on the “Start” button which is located at the left or bottom of the gray task bar in “Windows XP”:



# DETAILS OF STEP 9:

## Defragment all hard drives

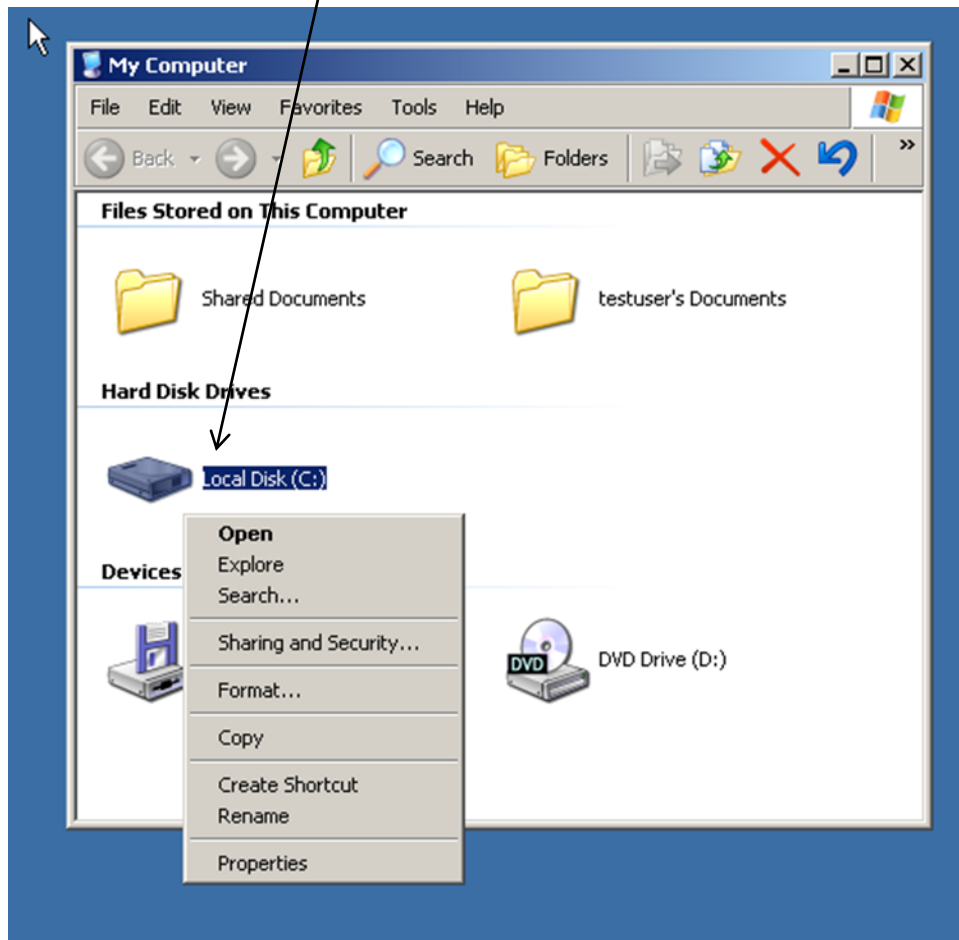
- Step 9b: Click on "My Computer" in the "Start menu":



# DETAILS OF STEP 9:

## Defragment all hard drives (continued)

- Step 9c: Use the RIGHT mouse button to click on the C: drive:



# DETAILS OF STEP 9:

## Defragment all hard drives (continued)

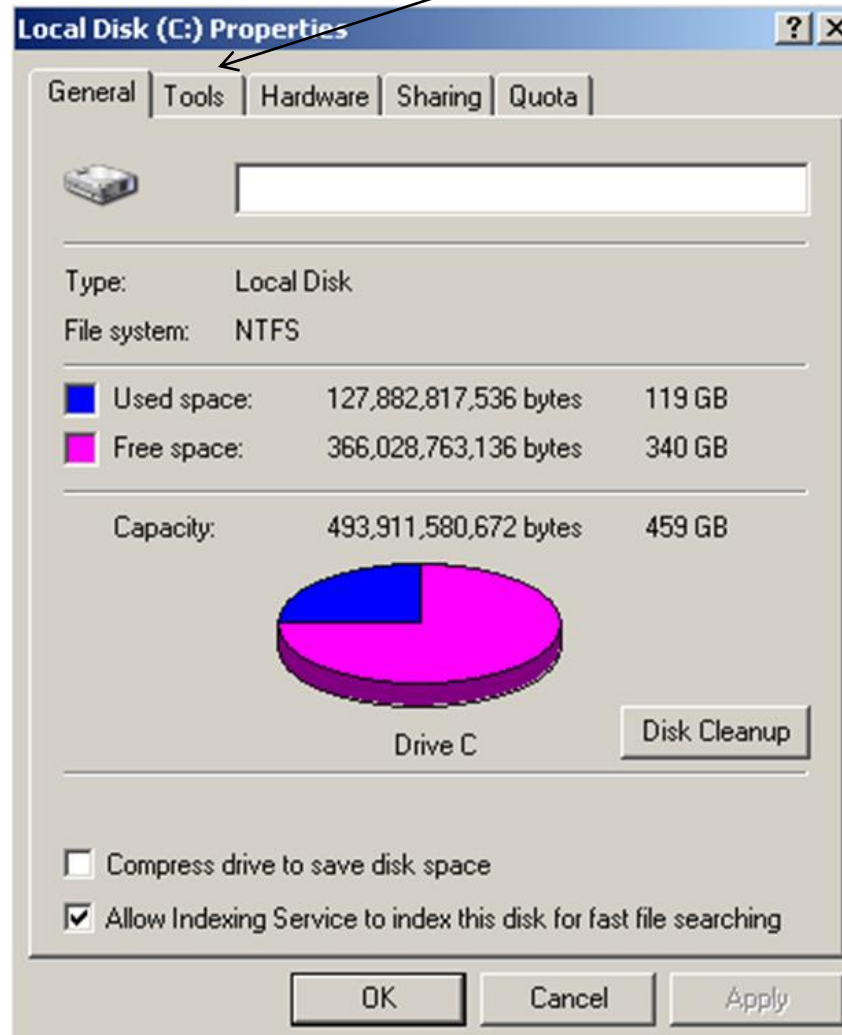
- Step 9d: Click on “Properties” on the pop-up utility menu.



# DETAILS OF STEP 9:

## Defragment all hard drives (continued)

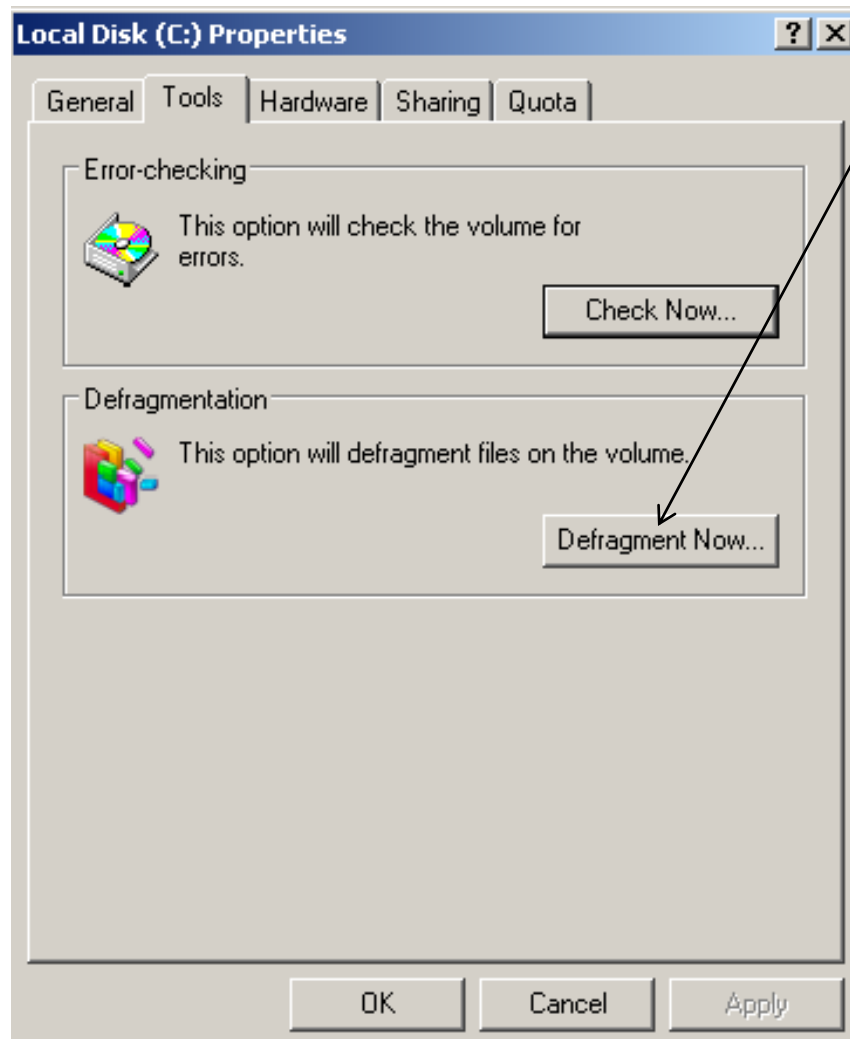
- Step 9e: Click on the “Tools” tab.



# DETAILS OF STEP 9:

## Defragment all hard drives (continued)

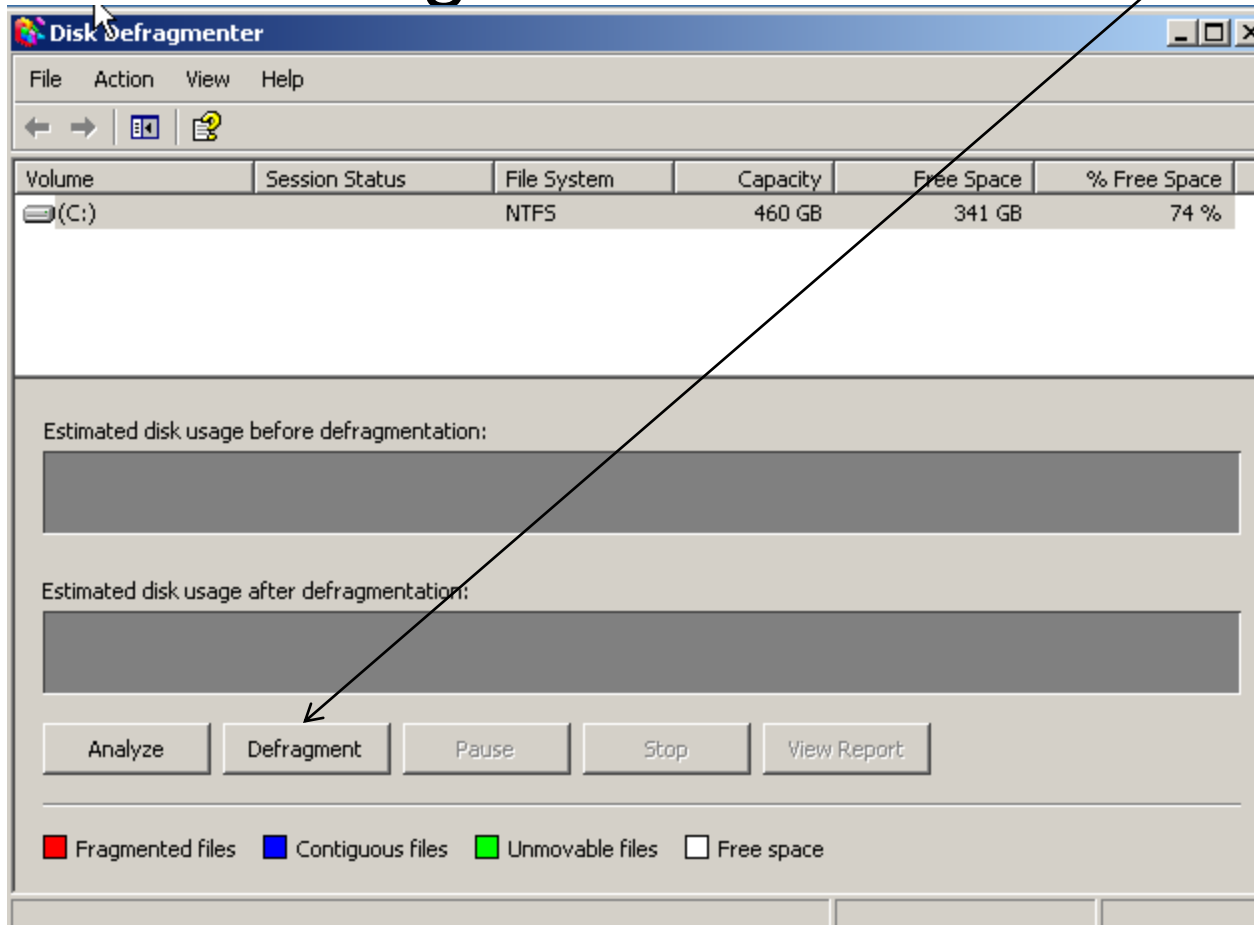
- Step 9f: Click on the “Defragment Now..” button.



# DETAILS OF STEP 9:

## Defragment all hard drives (continued)

- Step 9g: Click on the "Defragment" button of the "Disk Defragmenter" box:



## DETAILS OF STEP 9:

### **Defragment all hard drives (continued)**

- Step 9h: After the defragmentation for the C: drive completes, you should defragment any additional hard drives or hard drive partitions where you store data files:

Click on the listing of the drive; then click on the "Defragment" button.

Do NOT run the defragmentation process on hard drives or hard drive partitions that belong to the "Windows.." operating system such as those named "System", "System Reserved", "Dell Utilities", "Factory Image", "Backup", etc.

# APPENDIX 1

## Turning on "Physical Address Extension" ("PAE")

- Step 4t: Perform "Step 4u" through "Step 4zn", only if you were directed here from "Step 4L" on page 45.
- The objective of these additional steps is to turn on "Physical Address Extension" which is also known as "PAE".
- "PAE" is a Windows kernel extension. Some processors support it and some do not.

# APPENDIX 1

## Turning on "PAE" (continued)

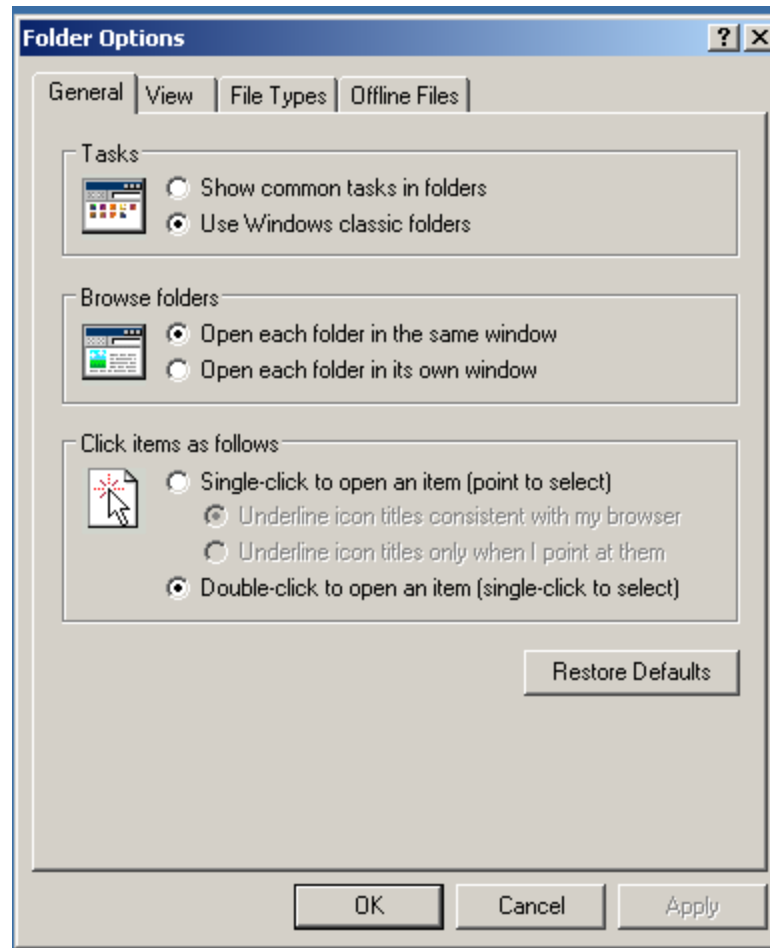
- Step 4u: Double-click on "Folder Options" in the "Control Panel":



# APPENDIX 1

## Turning on "PAE" (continued)

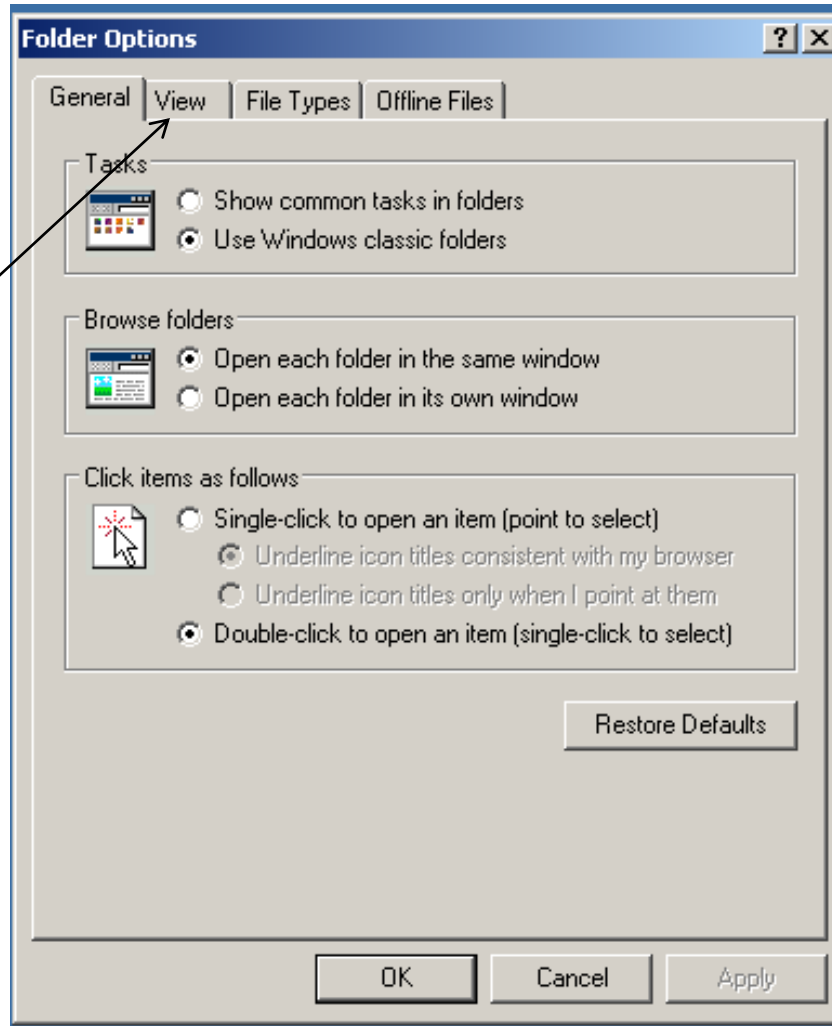
- Step 4v: A "Folder Options" box will be displayed:



# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4w: Click on the "View" tab:



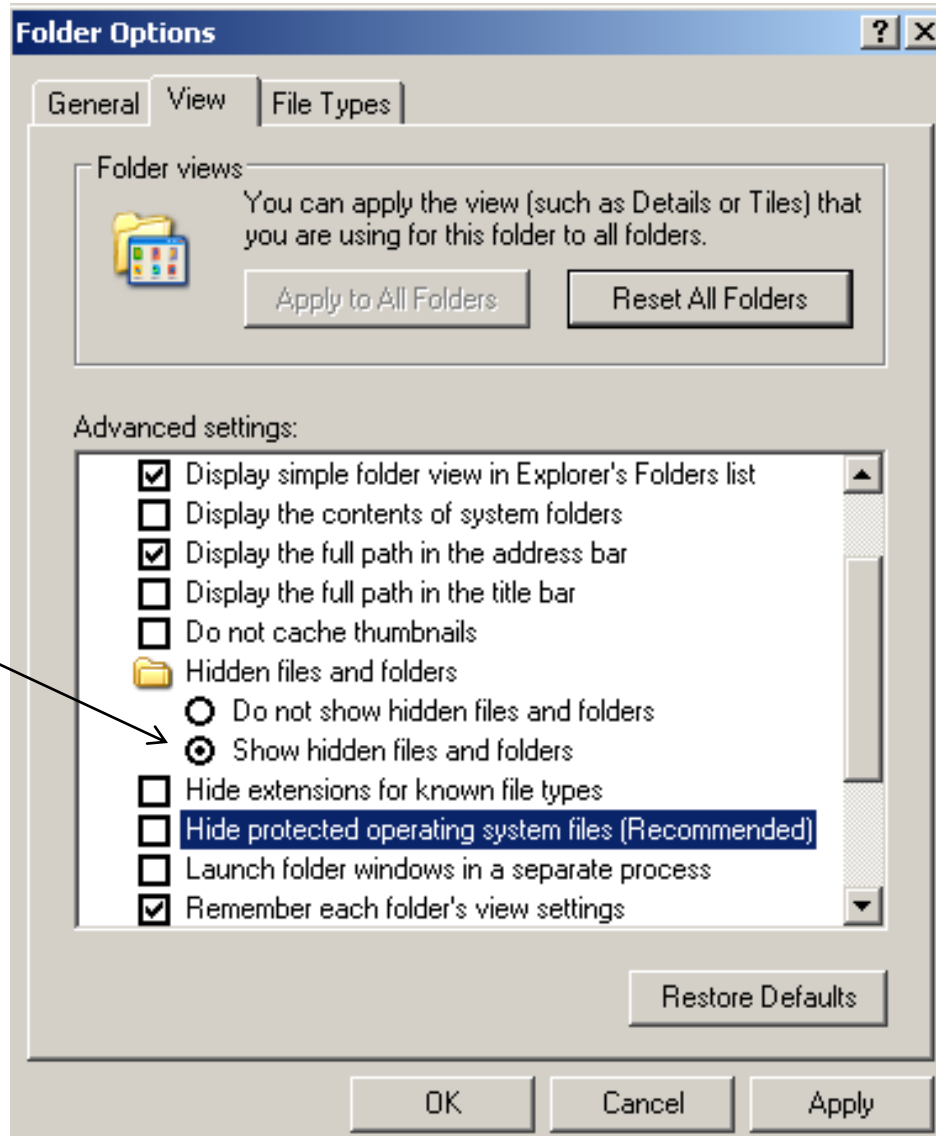
# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4x: Select the "Show hidden files and folders" option:

# APPENDIX 1

## Turning on "PAE" (continued)



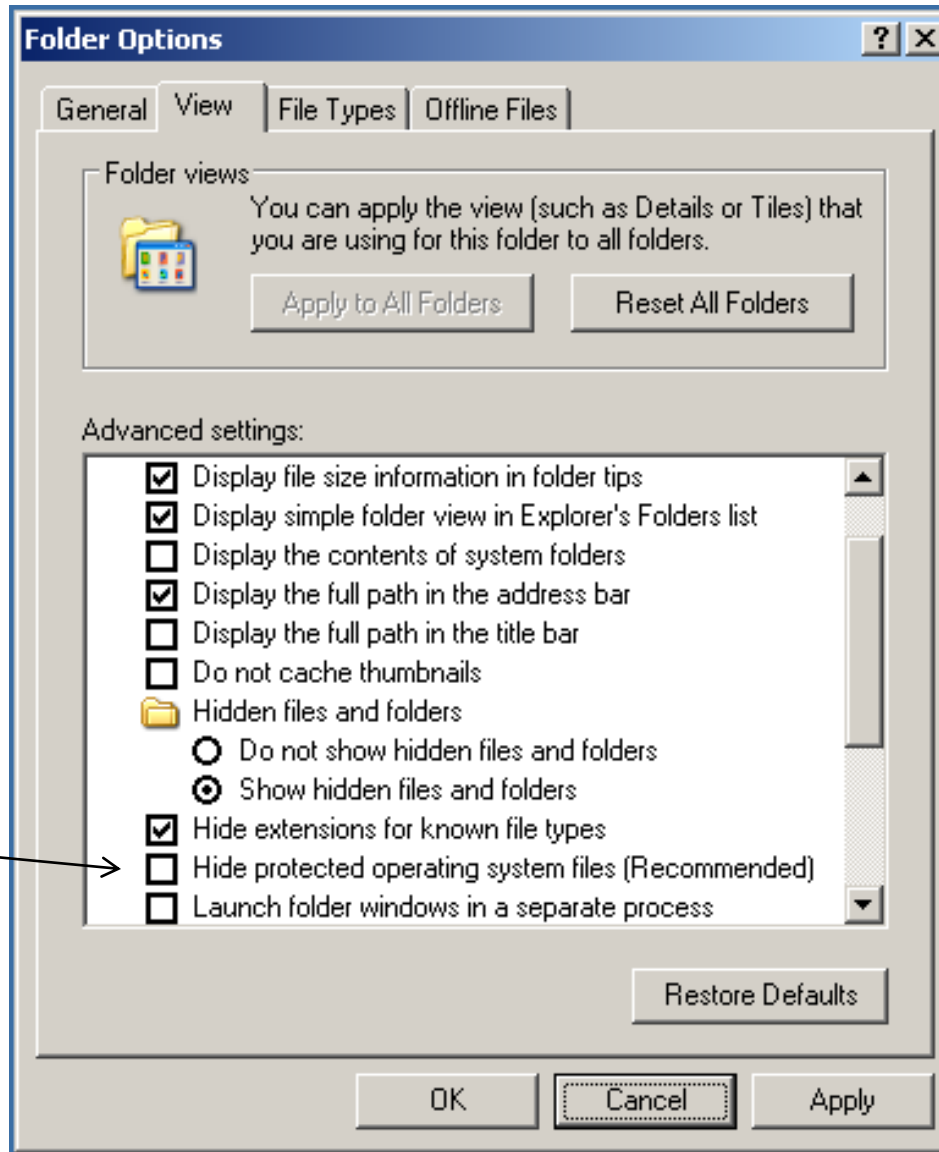
# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4y: Remove the checkmark from "Hide protected system files. (Recommended)", if you find one there:

# APPENDIX 1

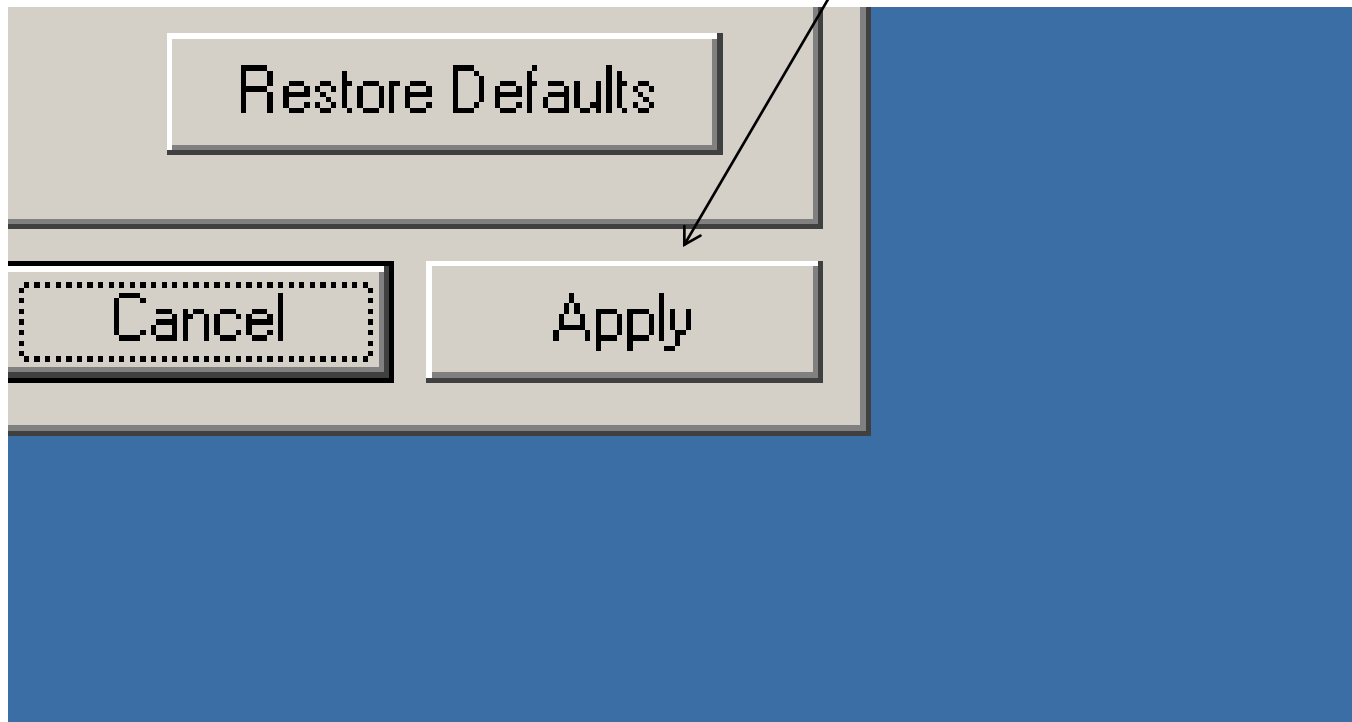
## Turning on "PAE" (continued)



# APPENDIX 1

## Turning on "PAE" (continued)

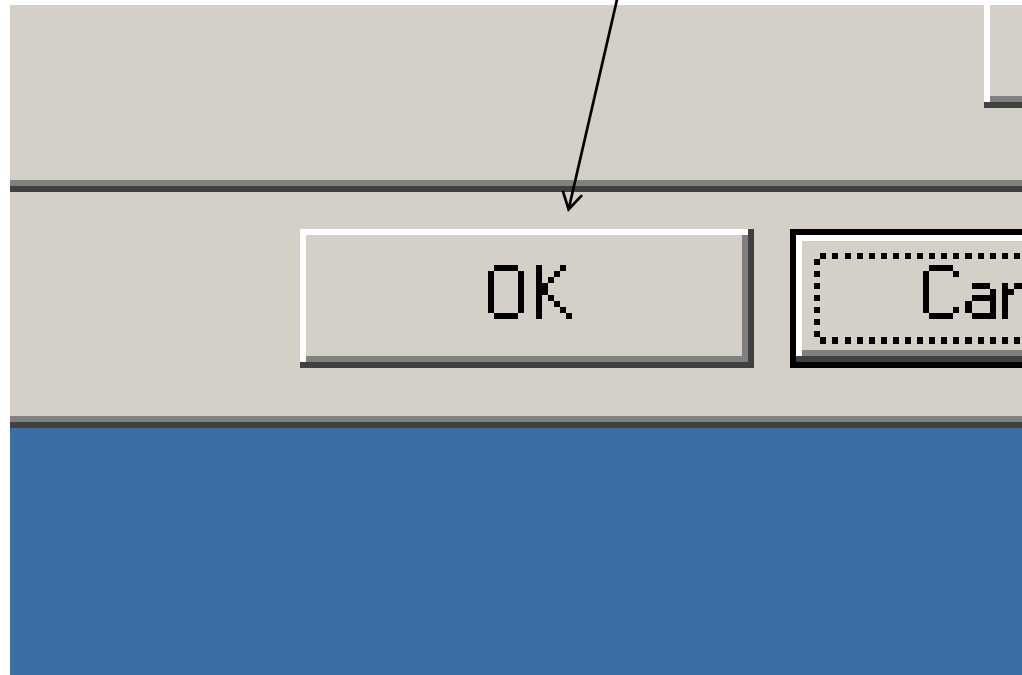
- Step 4z: Click on the "Apply" button of the "Folder Options" box:



# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4za: Click on the "OK" button of the "Folder Options" box:



# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zb: The "Folder Options" box will disappear.

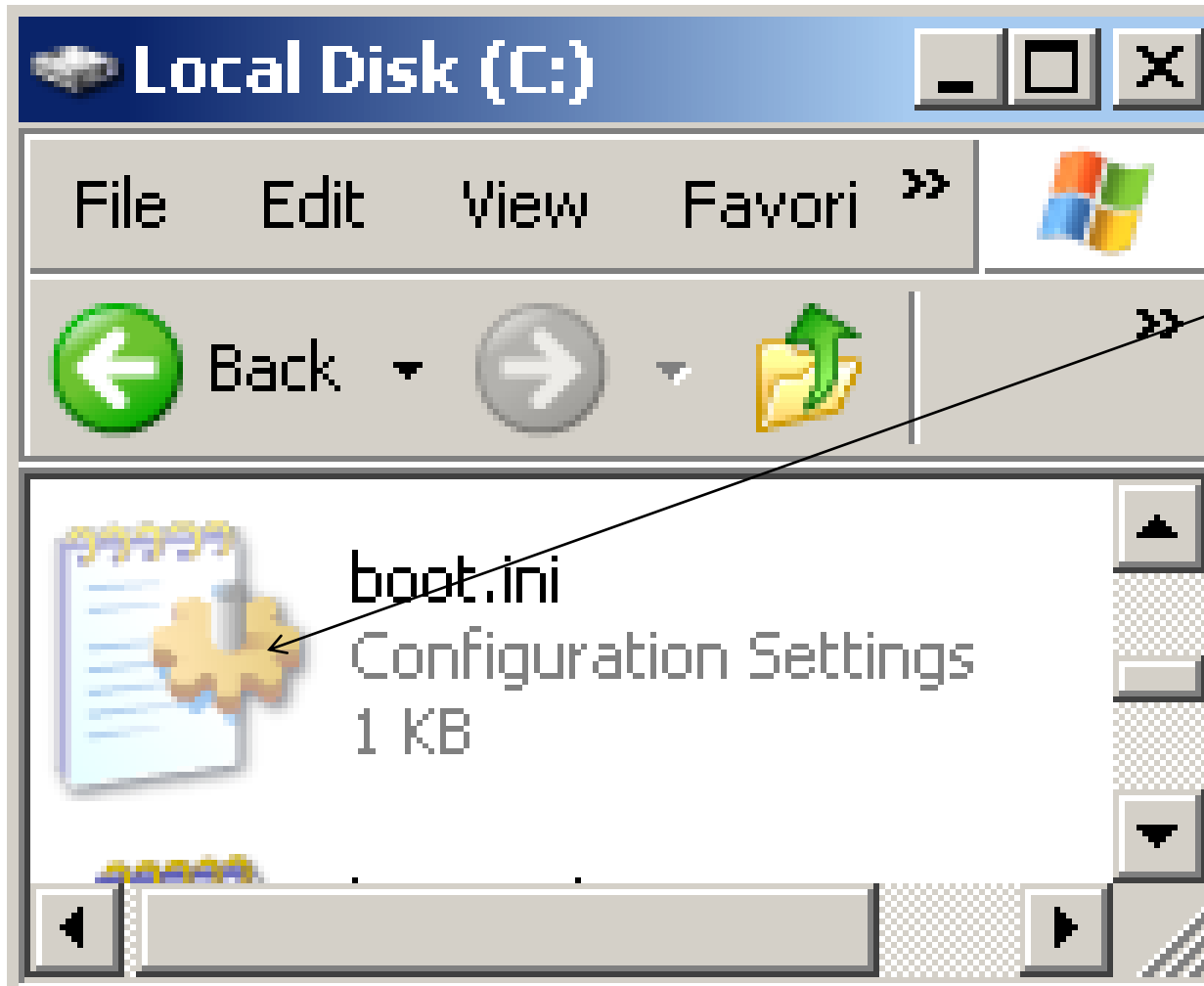
# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zc: Start "Windows Explorer", "My Computer", or "Computer", and locate the "boot.ini" file. The "boot.ini" file is located in the root directory of the C: drive for all "Windows XP" computers.

# APPENDIX 1

## Turning on "PAE" (continued)



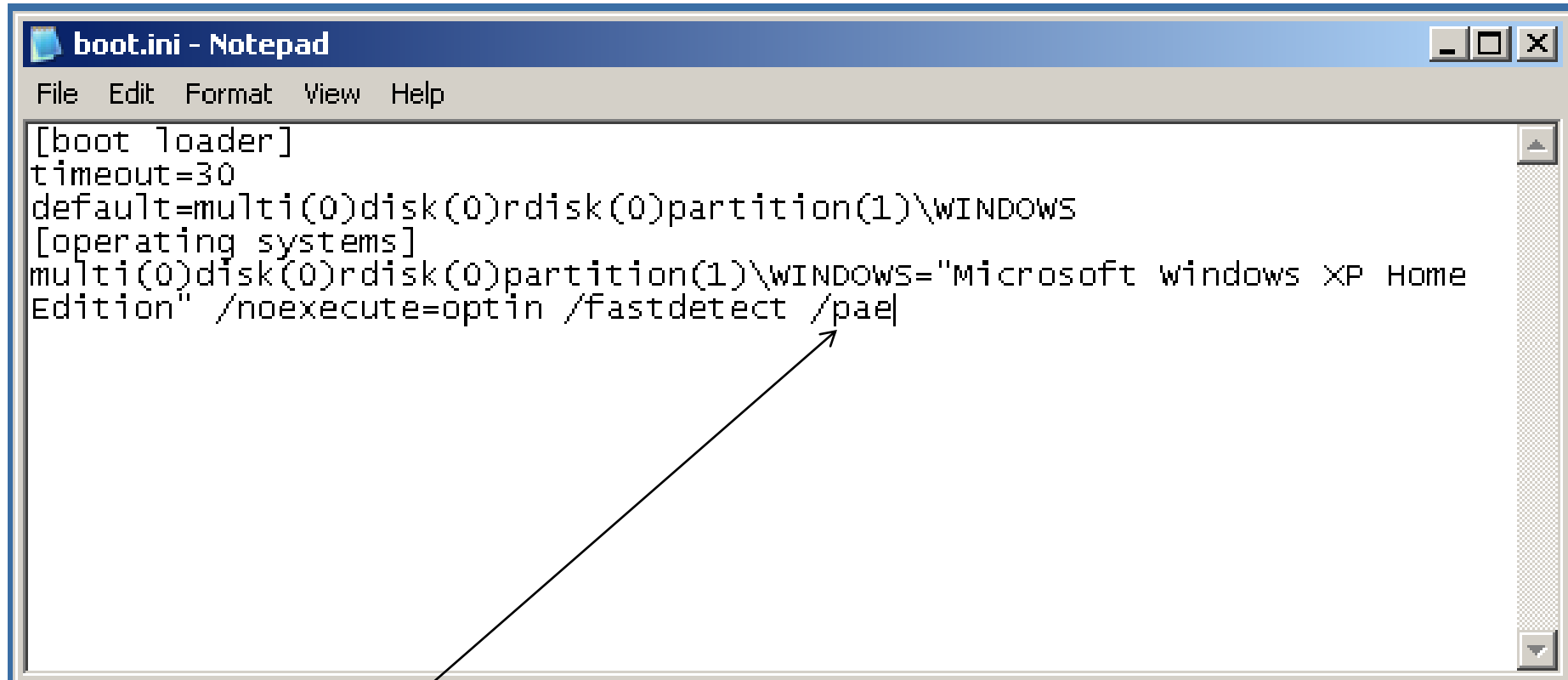
# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zd: Use "Notepad" or "Wordpad" to edit the boot.ini file by adding a /pae to it in the "[operating systems]" section:

# APPENDIX 1

## Turning on "PAE" (continued)



```
boot.ini - Notepad
File Edit Format View Help
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft windows XP Home
Edition" /noexecute=optin /fastdetect /pae
```

# APPENDIX 1

## Turning on "PAE" (continued)

- In rare instances, you might encounter a processor chip that does not support "PAE" and your computer will only boot in "Safe Mode" with a press of the F8 key during bootup. Once you get into "Safe Mode", you would then have to edit the "boot.ini" file to remove the /PAE that you entered in earlier.

# APPENDIX 1

## Turning on "PAE" (continued)

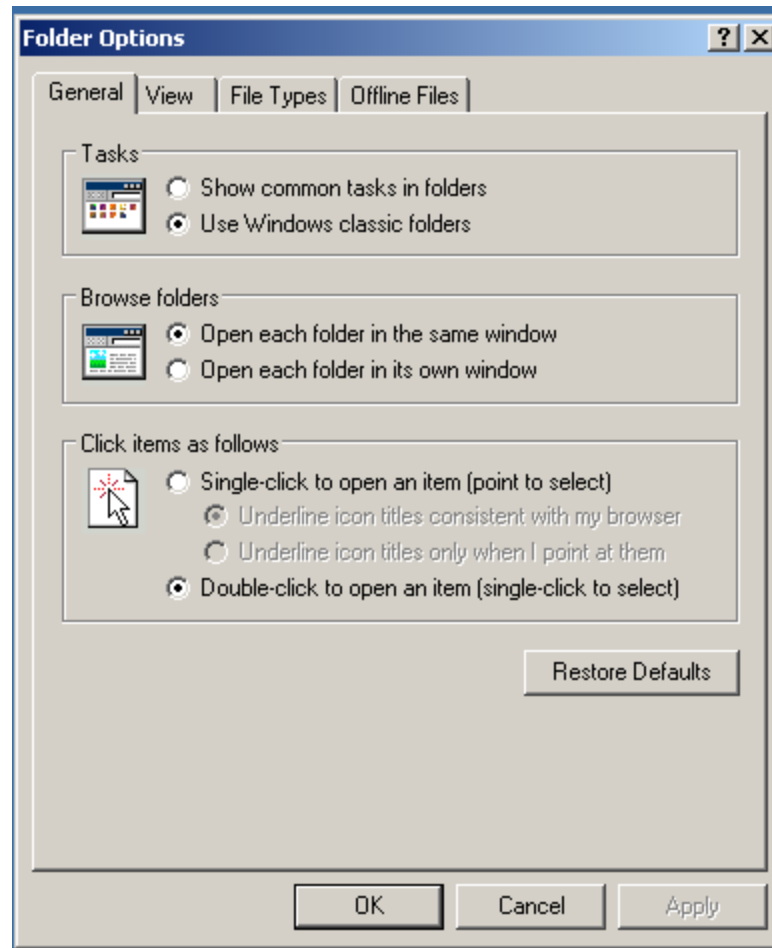
- Step 4ze: Double-click on "Folder Options" in the "Control Panel":



# APPENDIX 1

## Turning on "PAE" (continued)

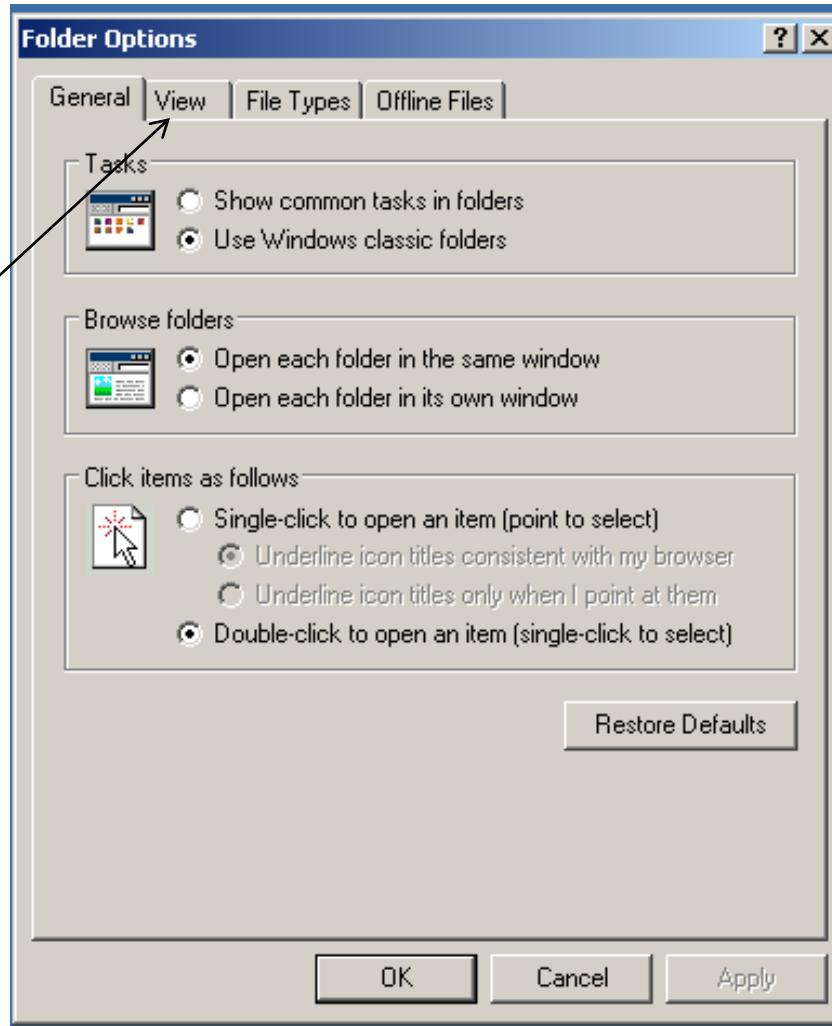
- Step 4zf: A "Folder Options" box will be displayed:



# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zg: Click on the "View" tab:



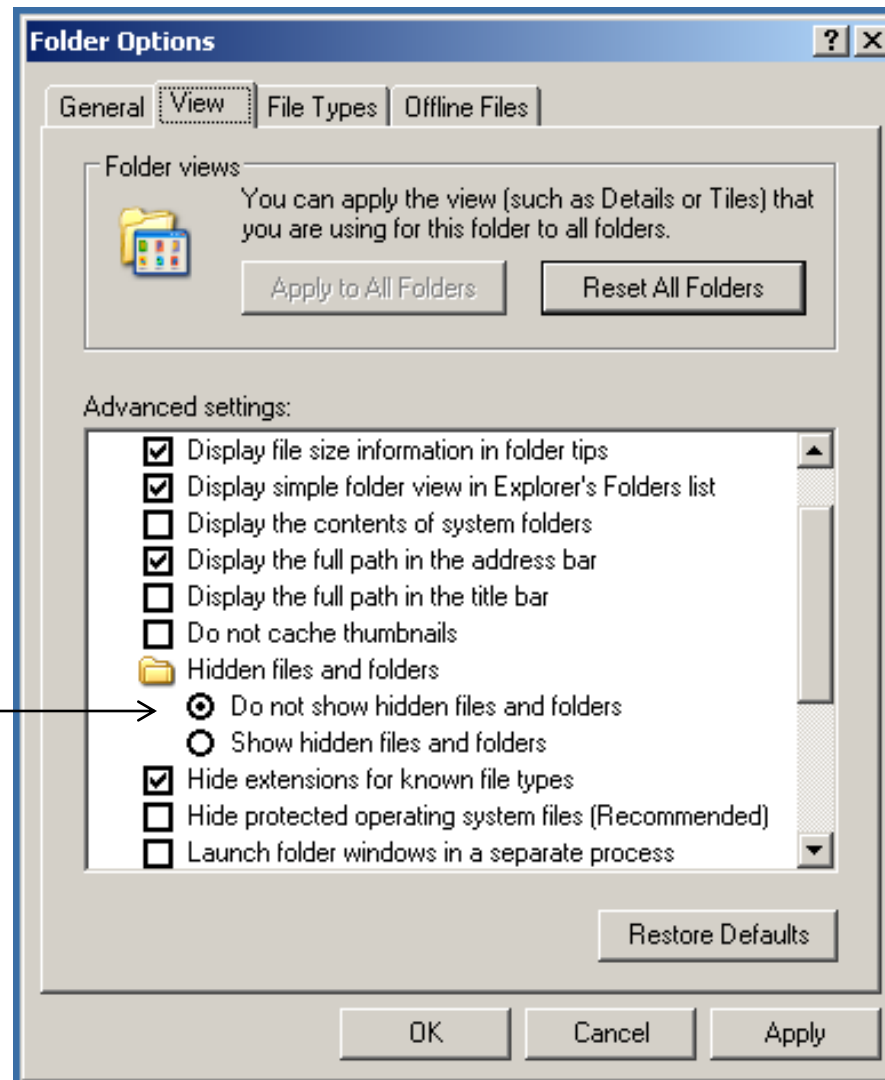
# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zh: Select the "Do not show hidden files and folders" option:

# APPENDIX 1

## Turning on "PAE" (continued)



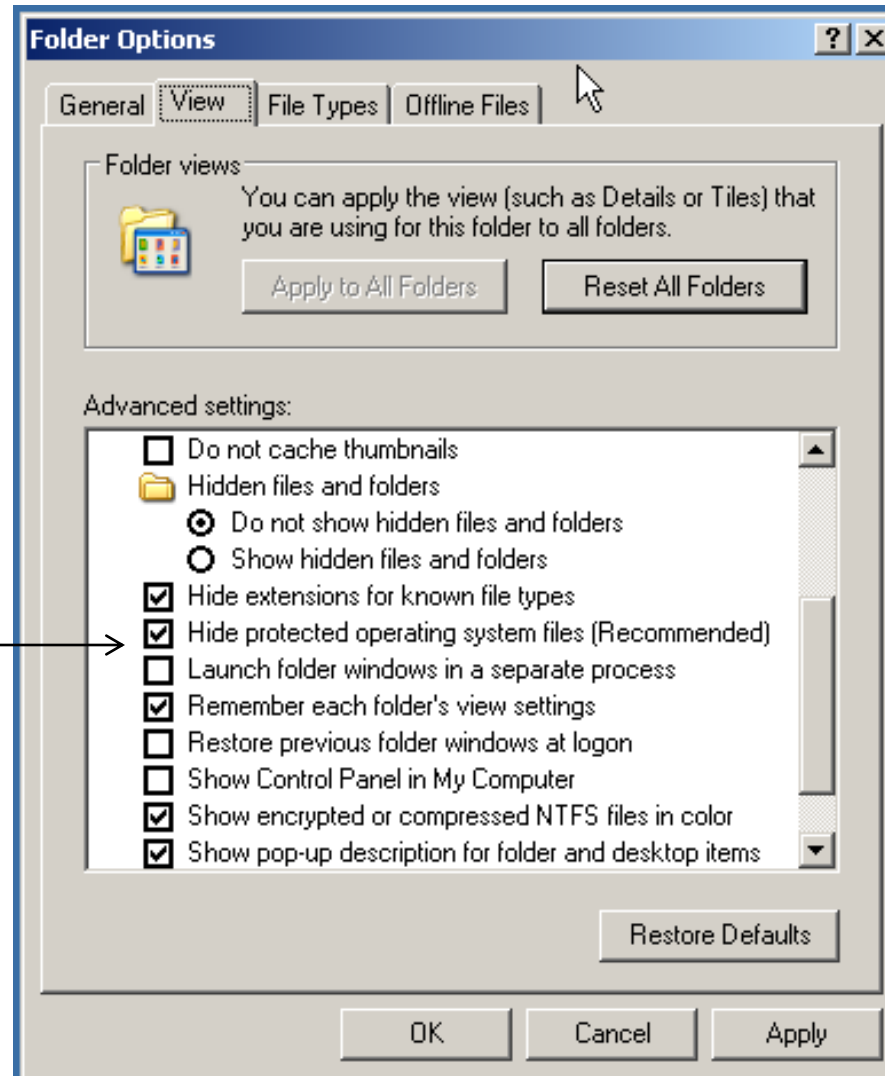
# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zi: Place a checkmark for "Hide protected system files. (Recommended)":

# APPENDIX 1

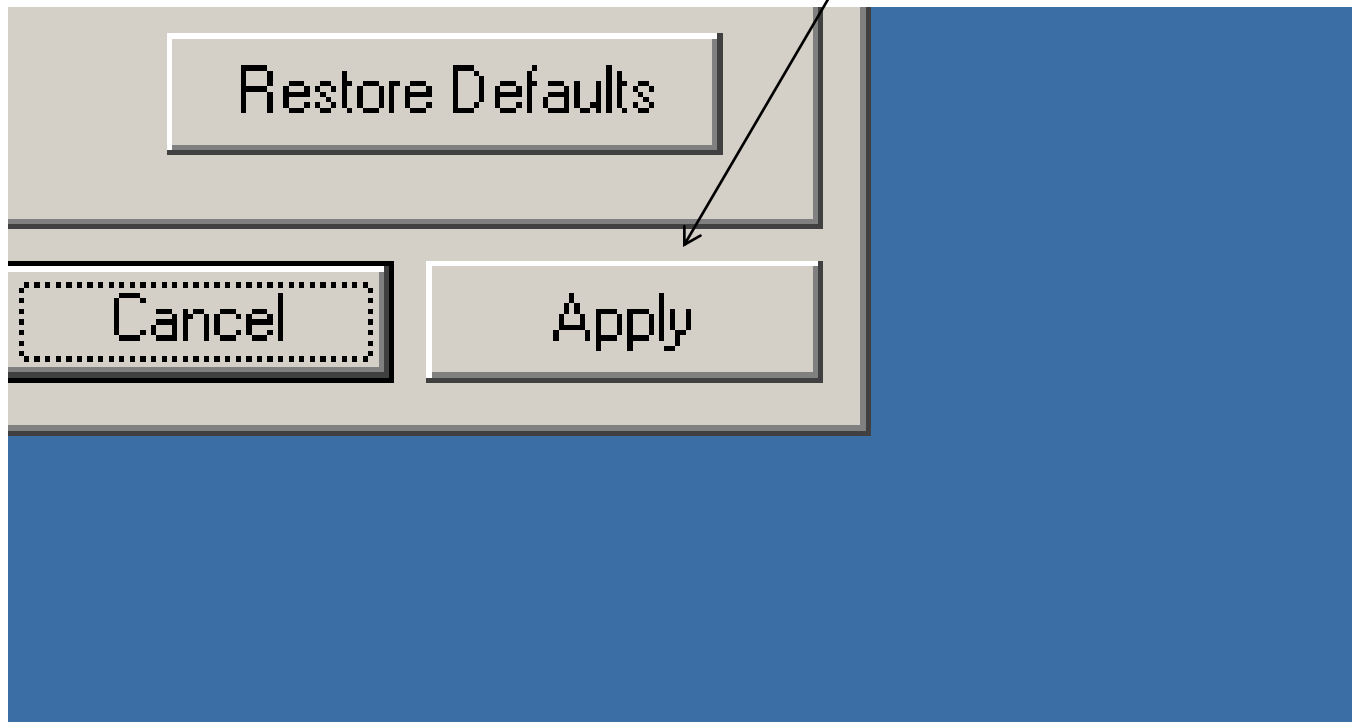
## Turning on "PAE" (continued)



# APPENDIX 1

## Turning on "PAE" (continued)

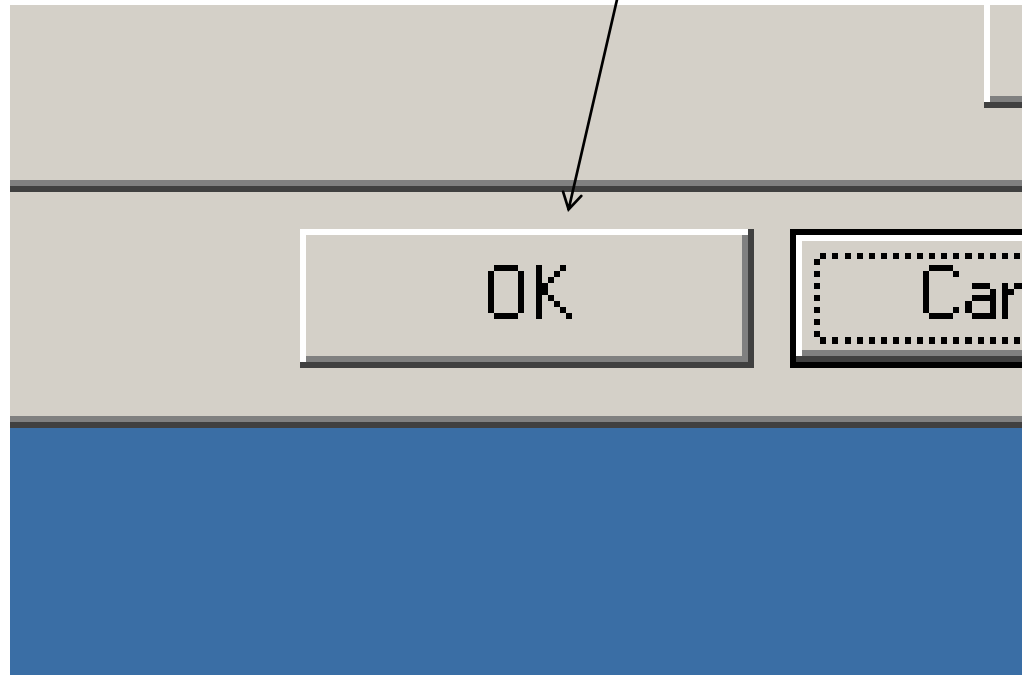
- Step 4zj: Click on the "Apply" button of the "Folder Options" box:



# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zk: Click on the "OK" button of the "Folder Options" box:



# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zL: The "Folder Options" box will disappear.

# APPENDIX 1

## Turning on "PAE" (continued)

- Step 4zm: Reboot the computer.
- Step 4zn: Go to “Step 4A” (on page 34).

# APPENDIX 1

## Turning on "PAE" (continued)

**If you are running Windows XP inside an "Oracle VM VirtualBox" virtual machine:**

Prior to editing the "boot.ini" file, you will probably have to turn on "Enable PAE/NX" as follows:

# APPENDIX 1

## Turning on "PAE" (continued)

**If you are running Windows XP inside an "Oracle VM VirtualBox" virtual machine (continued):**

Use the right mouse button to click on the "Windows XP" virtual machine in the "Oracle VM VirtualBox Manager" window. Select "Settings" from the pop-up context menu.

# APPENDIX 1

## Turning on "PAE" (continued)

**If you are running Windows XP inside an "Oracle VM VirtualBox" virtual machine (continued):**

Click on the "System" selection of the "Settings" box.

Click on the "Processor" tab.

# APPENDIX 1

## Turning on "PAE" (continued)

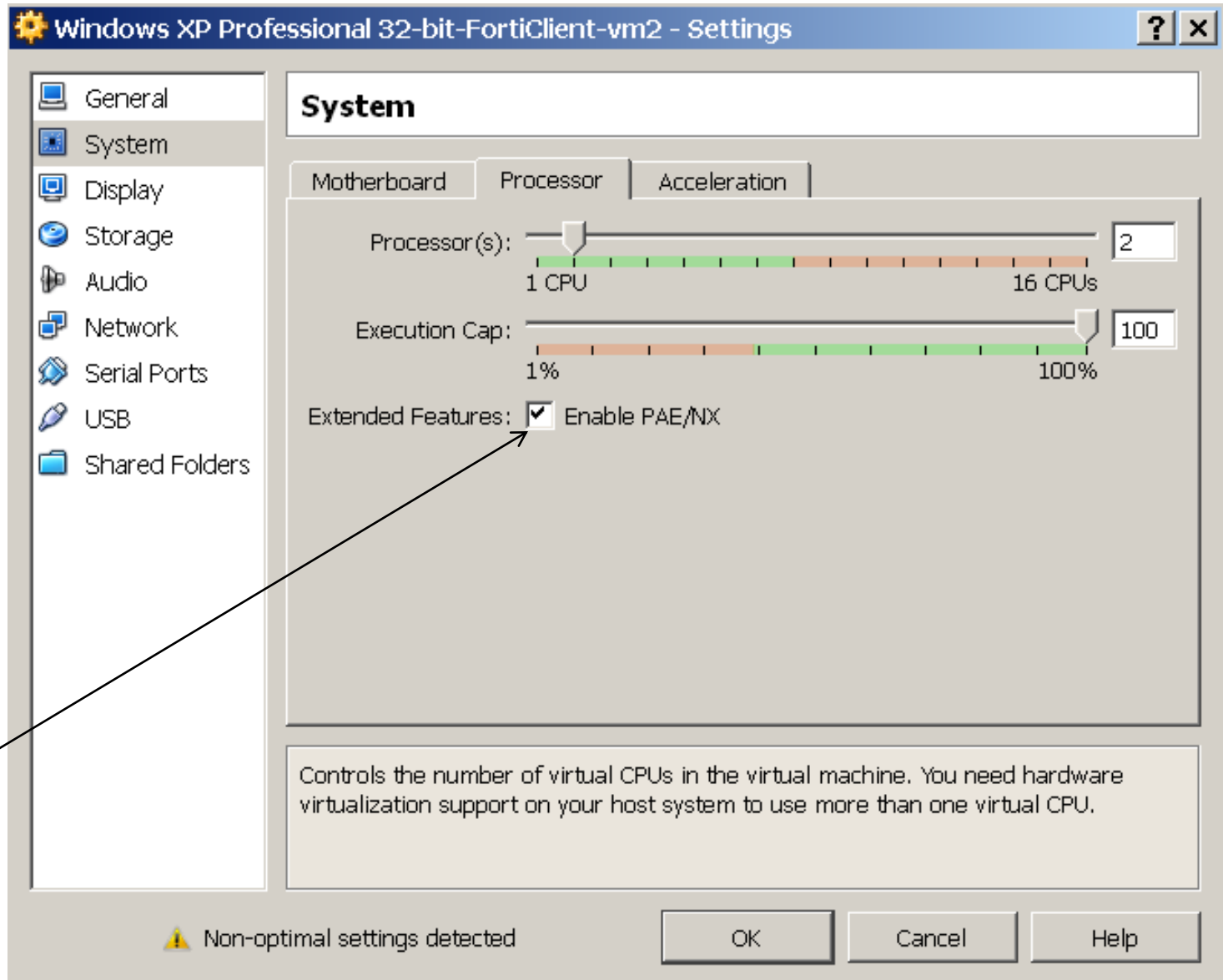
**If you are running Windows XP inside an "Oracle VM VirtualBox" virtual machine (continued):**

Put a checkmark in the box to the left of "Enable PAE/NX", if there is not one already there.

Click on the "OK" button of the "Settings" box.

# APPENDIX 1

## Turning on "PAE" (continued)



Windows XP Professional 32-bit-FortiClient-vm2 - Settings

**System**

Motherboard Processor Acceleration

Processor(s): 1 CPU 16 CPUs 2

Execution Cap: 1% 100% 100

Extended Features:  Enable PAE/NX

Controls the number of virtual CPUs in the virtual machine. You need hardware virtualization support on your host system to use more than one virtual CPU.

⚠ Non-optimal settings detected

OK Cancel Help