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Table of Contents

Windows XP-Professional Installation

This manual will help you install Windows XP-Professional in the home or workplace. Follow each section through to completion for optimum results. Windows XP was released in 2001 by Microsoft. It was designed using the Microsoft NT operating system kernel. Xp is short for eXPierence. Windows XP was the successor to Windows Me and Windows 2000 and was the predecessor to Windows Vista. (Microsoft Corporation, 2001)

A.1.0: Minimum System Requirements

The minimum System Requirements for Windows XP-Professional can be seen in the table below. Check your PC Manufacturers Manual to see if your Computer meets the minimum recommended requirements. Do not attempt installation if your computer does not at least meet the recommended requirements. For more information on Windows XP-Professional system requirements visit, http://windows.microsoft.com/en-US/windows/windows-help?os=winxp#windows=windows-xp

Central Processing Unit (CPU)	Pentium 233 - megahertz (MHz) processor or faster (300 MHz is recommended)
Random Access Memory (RAM)	At least 64 megabytes (MB) of RAM (128 MB is recommended)
Hard Disk Space	At least 1.5 gigabytes (GB) of available space on the hard disk
Other System Requirements	- CD-ROM or DVD-ROM drive - Keyboard and a Microsoft Mouse or some other compatible pointing device - Video adapter and monitor with Super VGA (800 x 600) or higher resolution - Sound card - Speakers or headphones

A.1.0: Beginning Installation

This installation will guide you through Windows XP installation from a CD.

(i)   Firstly you will have to configure your computer to boot from a CD by entering the BIOS. Do this by starting your computer and pressing F2/F10/F12/delete depending on manufacturer.

(ii) You may have to go through the BIOS setup utility if you have not done so already.

(iii) Next navigate to the BIOS boot order options.

(iv) Configure the BIOS to boot from a CD on start-up and confirm new boot order.

(v)   Restart your Computer with the Windows XP-Professional CD inserted.

(vi) Press any key to begin Windows XP setup

Tip:

- Remember to reset the BIOS boot order to the right bootable device after installing the operating system.

A.1.1: Windows XP Installation Setup

Windows Installation setup will now begin. This section will guide you in setting up your windows Installation.

(i)   The first screen welcomes you to setup you are given the option to repair a previous XP installation, install Windows XP or exit the setup by pressing "Esc". Continue by pressing "Enter".

(ii) The user licence agreement will appear on screen. Agree by pressing f8 to continue.

(iii) Next you will create partitions on the hard drive for your machine. If your hard drive has not been used before it will appear as 1 unformatted space. (Fig 1). Windows can be set up on one partition or multiple partitions. To create a partition press "c"

```
Windows XP Professional Setup

   The following list shows the existing partitions and
   unpartitioned space on this computer.

   Use the UP and DOWN ARROW keys to select an item in the list.

       •   To set up Windows XP on the selected item, press ENTER.
       •   To create a partition in the unpartitioned space, press C.
       •   To delete the selected partition, press D.

   51200 MB Disk 0 at Id 0 on bus 0 on atapi [MBR]
           Unpartitioned space                 51199 MB




   ENTER=Install   C=Create Partition   F3=Quit
```

Fig 1:

Fig 1 shows the windows partition creation screen
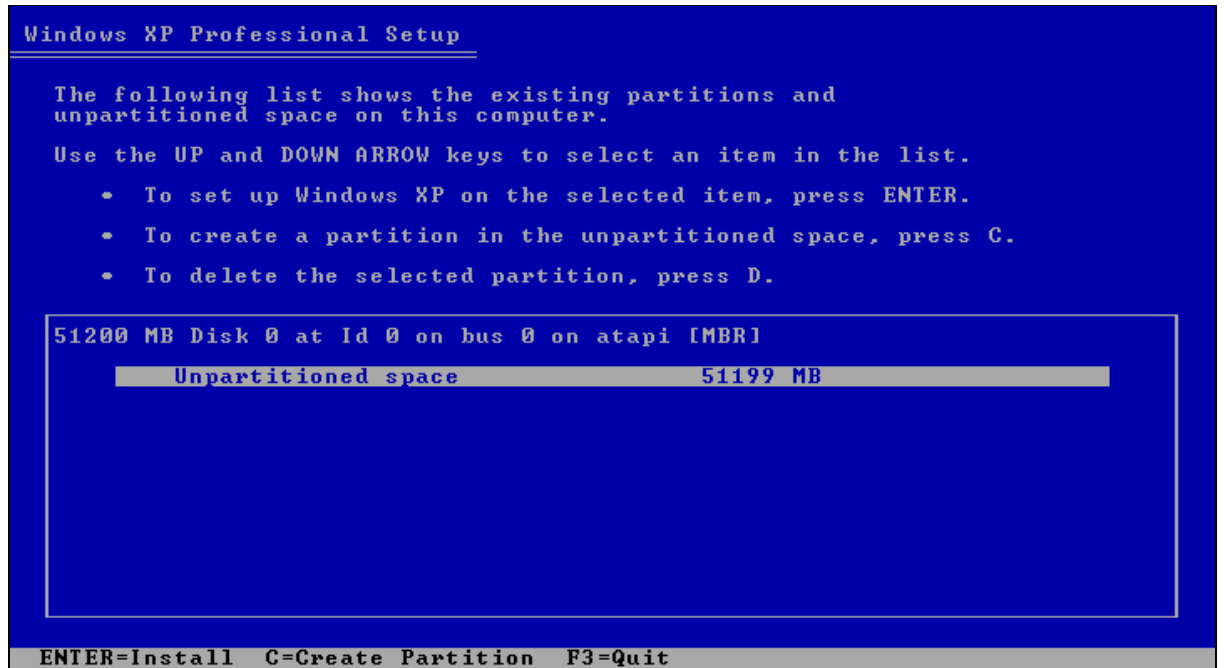
(iv)   After creating the partition you will be asked how big the partition should be in Megabytes (MB) type the amount you want. (**Make this partition less than 30000MB**) and press enter. This will create the C: drive on your hard drive

(v)   To create another partition navigate using the arrow keys on your keyboard to the unpartitioned space, press "C" to create a partition.

(vi)   Then enter the size you want this partition to be. If you only want to have two partitions leave it the size of the remaining unpartitioned space. Press enter to create the partition.

(vii)   This will create the E: Drive on your hard drive. Figure 2 shows the drive once two partitions have been created.

Figure 2:

This shows a drive with 2 partitions C: and E:
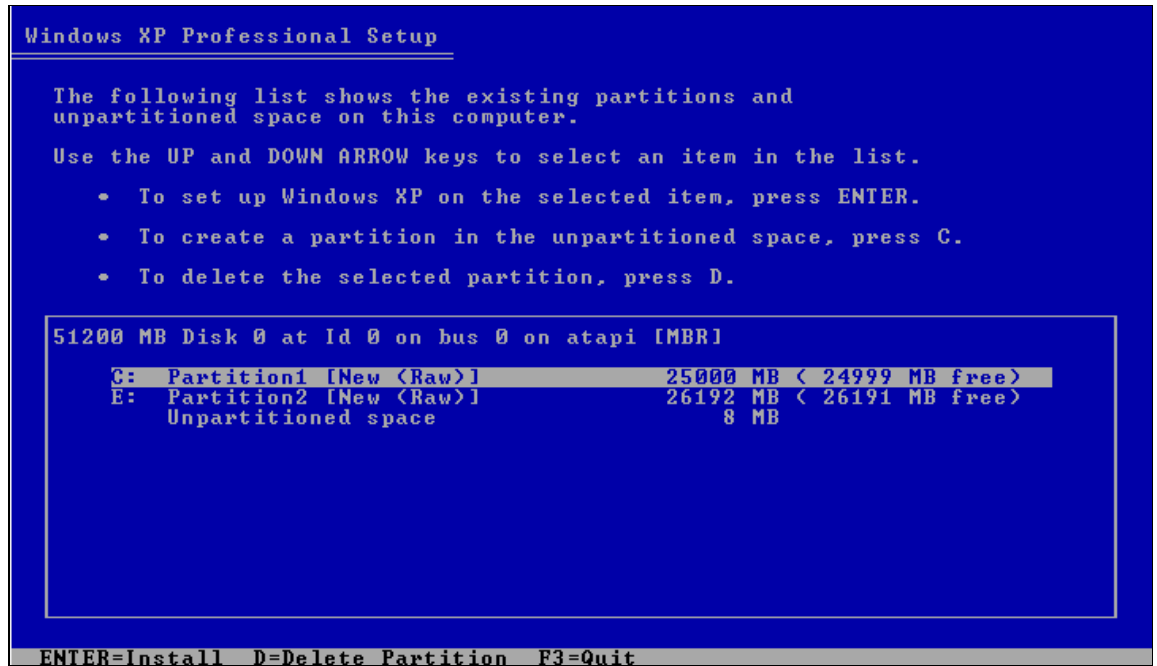
(viii) You must now choose which partition to install Windows XP-Professional on. Use the arrow keys to navigate the partition you want and press enter. In this example we will install the operating system on the C: partition which should be less than 30000MB in order to use MSDOS diagnostic tools

(ix) You must now choose a file formatting type use the arrow keys to navigate and select "format the partition using FAT file system" (not quick install) and press enter to continue. See fig 3.


Fig 3:

This shows the formatting options.
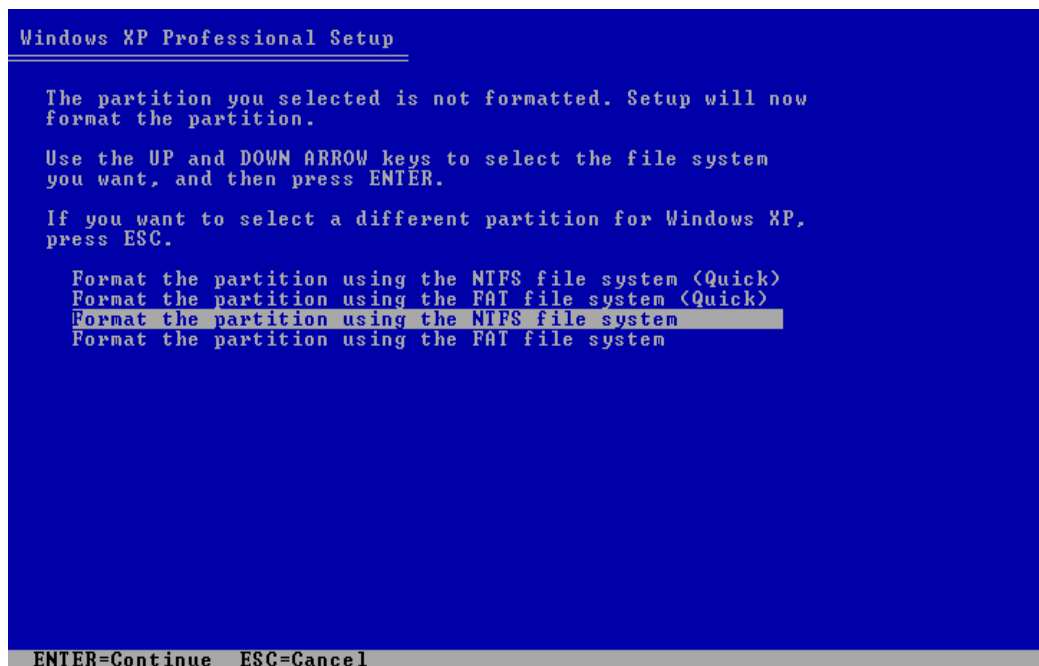
(x)   You will be informed (if your partition is larger than 2GB) that you cannot use FAT16 so instead you will use FAT32. It will inform you that you may have trouble using it with MS-DOS and older versions of windows. However you will still be able to use it with Windows 95 (service pack 2) and greater (Microsoft Corporation, 2012). Press enter to continue

(xi)   The drive partition will then format this may take up to 10 minutes. Do not turn off your computer during the formatting process.

(xii)   After formatting the drive it will then countdown form 15 and restart to begin installing Windows XP-Professional.

A.1.2: Windows XP Installation

Windows XP-Professional installation takes 30-40 minutes depending on the speed of your computer. The installation will be interrupted sometimes in order for the user to enter information such as local date, time and language settings etc. On completion windows will be fully installed onto the host machine.

(i)   The first interruption in installation will ask you to set up regional and language options in the operating system such as the text input language and the keyboard layout settings. Use the directions on screen to navigate to the correct menu and select from items shown. (fig 1)
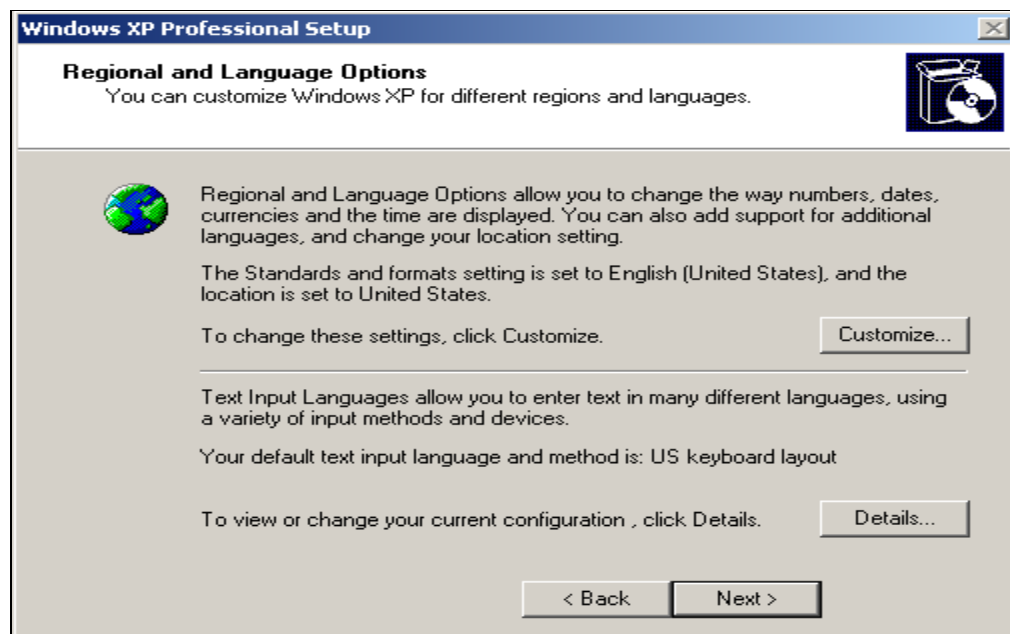
Fig 1:

In this panel you can customise the local settings for your machine.

(ii)   Next personalise your software by entering your name and your organisations name press next to continue.

(iii)   Now enter your product key to continue this can be found in your Windows XP-Professional packaging or in your receipt from Microsoft. If you do not have a product

key contact your systems administrator or purchase one from the Microsoft web store, http://www.microsoftstore.com/store/mseea/en_IE/home

If you have a licence key enter it into the text boxes on screen and press next to continue.

(iv)   Now you will be shown the name of the computer leave this at the default name.

(v)   Enter the Administrator password for this machine and confirm it by repeating it in the box below. Press next to continue.

(vi)   Now set the system time and date and then select your time zone from a drop down menu. You are given the option to automatically adjust the clock for daylight savings time you can untick this if your country does not practice daylight savings time e.g. Russia.

(vii)   The system will now continue to install in a few moments another screen asking you to configure your network settings appears on screen. Select typical and press continue

(viii)   Next enter your computers domain or workgroup. In this case the computer is part of a workgroup. Enter the name of your workgroup and press next to continue. (Fig 2)

Fig 2:

This Computer Is now part of a workgroup
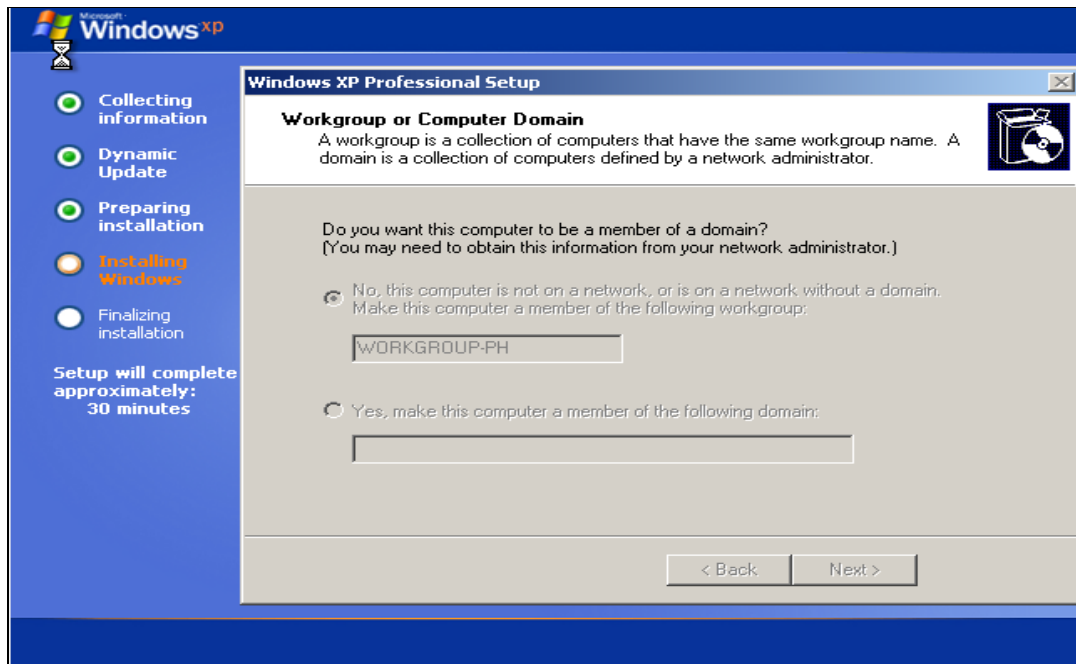
(ix)   The installation will then continue for another 20-30 minutes approximately. On Completion the computer will reboot for the first run of Windows XP-Professional.
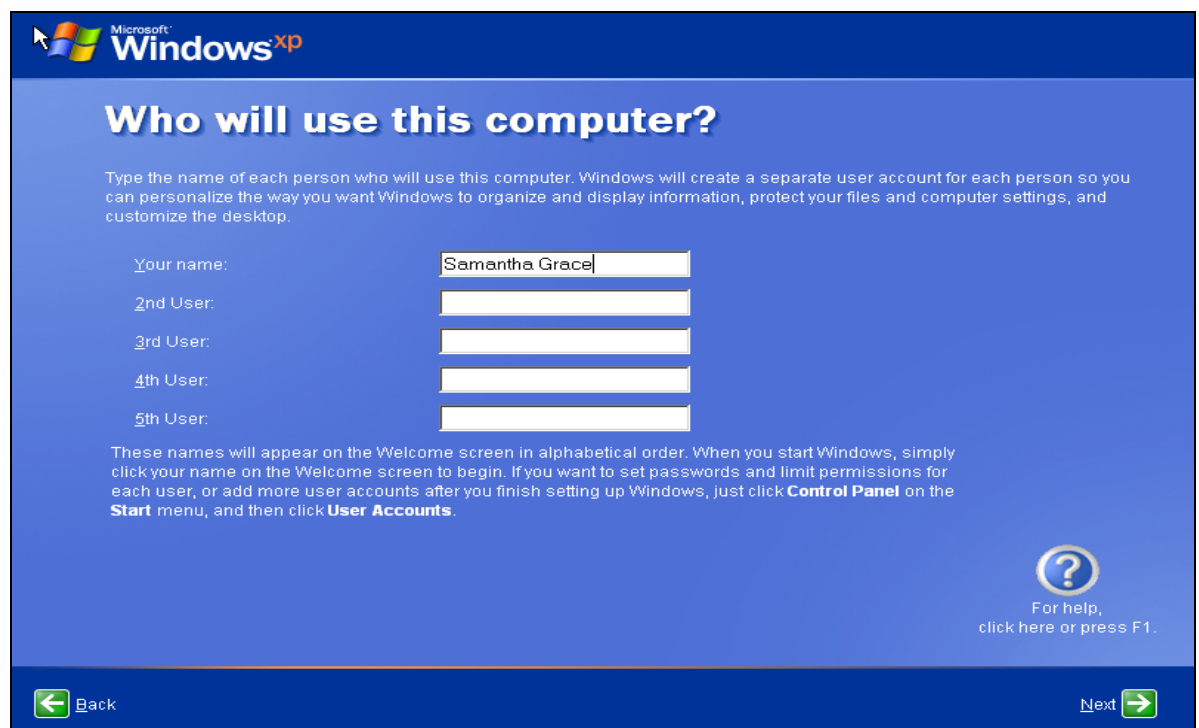
A.1.3: Windows XP First Run

Windows XP-Professional has now being installed on your machine. On the first run after the system reboots you will be taken through a guide to configure important settings. Please follow the steps carefully.

(i)   The first screen will greet you and congratulate you on purchasing and installing Windows XP-Professional press next to continue.

(ii)   The next screen will give you the option to turn on or off automatic updates. Turn updates on and press continue.

(iii)   Next select whether your computer will connect directly to the internet or connect through a home network. Follow the on screen instructions to set up your network appropriately.

(iv)   Now you will be given the option of registering with Microsoft for information on product s and promotions. Pick yes or no and press next.

(v)   Next you will be given the option to enter the names of the users for this operating system. The first user will become an administrator for this machine. (Fig 2).

Fig 2:

This menu is used to create users profiles for the operating system. The name you put for "your name" will become an administrator for the computer

(vi)   The first run setup has now been completed you will see a screen thanking you for setting up the machine press next to launch Windows XP-Professional.

## A.1.4: Windows XP Formatting Other Partitions

Your machine is now installed, setup and working. You may have created more than one partition for your machine at the moment it exists but is not formatted with any file system so is effectively useless as files cannot be stored on it. In this section you will format a partition with new technology file system (NTFS) formatting.

(i) Click the ![start] on your desktop. It is located on the bottom left of your machine.

(ii) Right click the ![My Computer] button. On the menu that appears press "manage". This will load the Computer Management console.(fig1)

(iii) Once in the computer management console click on the storage button to show the drop down list on the left side menu. Then click disk management to load the disk management screen. (fig 1)


Fig 1:

This is the computer management console. The arrow points at the disk management button located in the storage dropdown menu
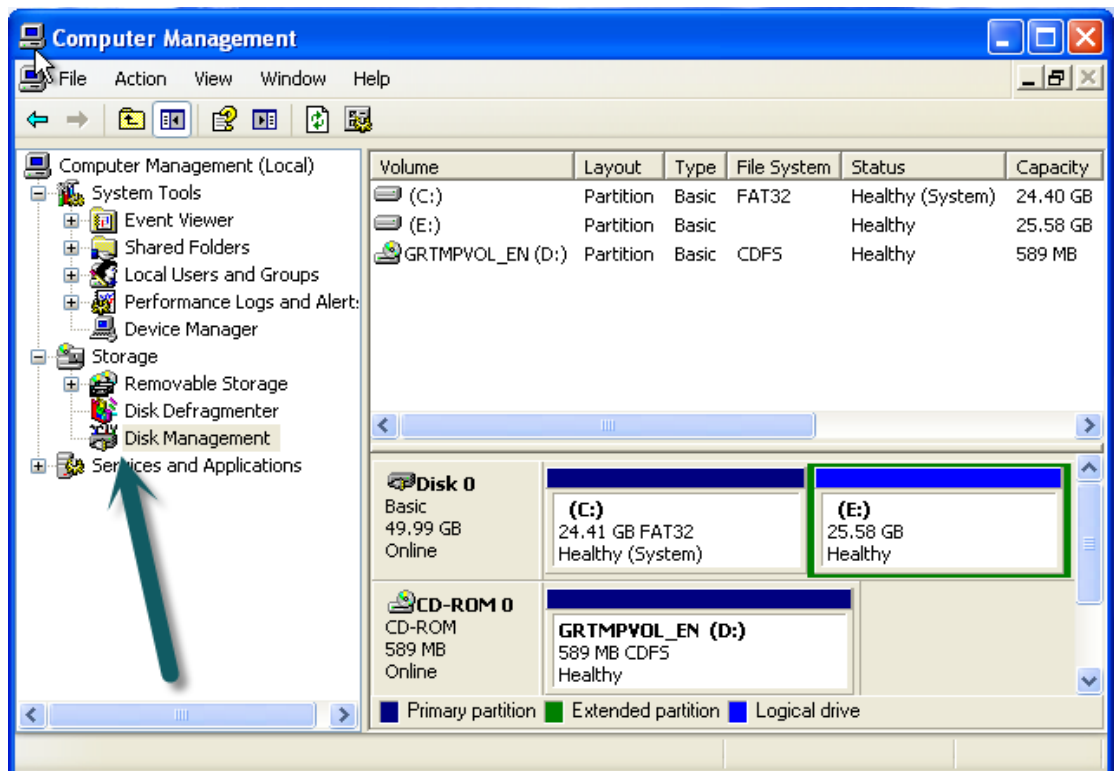
(iv) On this screen you will notice 2 drive letters Drive C: and Drive E: look at fig 1 notice that under the file system heading the C: drive has FAT32 file formatting. This is the file system format for this drive but drive E: has no file format. To start formatting right click the E: drive highlighted in green in Figure 1.

(v) Click format this will load up the formatting menu. Enter a name for this partition or leave it at the default name "New Volume". Next specify the format type to use in this case NTFS. Finally leave the allocation unit size at the default value. Press ok to begin formatting(Fig 2)

Fig 2:

This menu shows the details for specifying the format type, name and allocation unit size for your partition. You are also given the option to perform a quick file format and enable file and folder compression
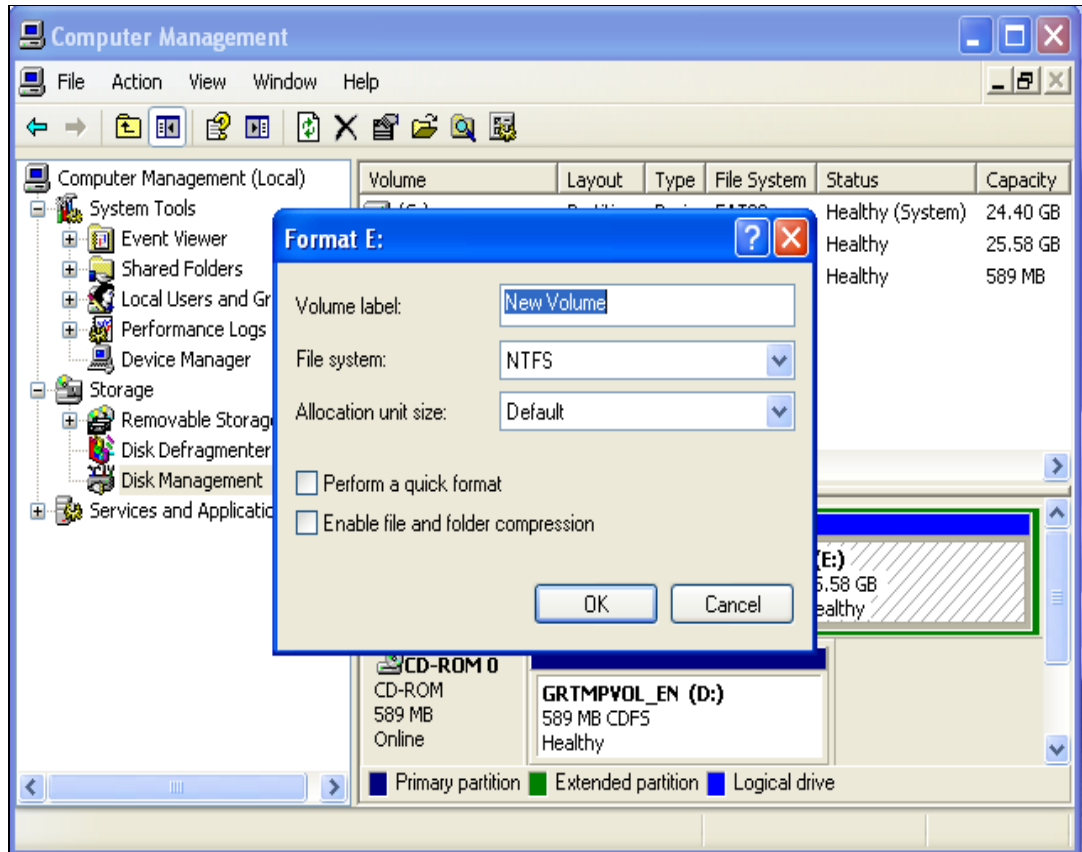
(vi)   Your partition will now format this will take approximately 2-5 minutes.

(vii)   Congratulations you have now created and formatted 2 partitions on your machine there is much more you can do such as create numerous logical drives in the extended partition depending on your needs for more details visit http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/dm_create_partitions.mspx?mfr=true

A.2.0: Updates for Windows XP-Professional

Windows XP-Professional may from time to time release updates. These are bug and security patches that resolve issues which have been discovered within the OS or secure the OS in order to protect from viruses. Service Packs have also been released the last and final service pack for Windows XP was Service Pack three in 2008. This installed all previous updates and added new features such as "Network Access Protection compatibility" among others for a full list and more information on service pack 3 visit http://winsupersite.com/article/faqtip/windows-xp-service-pack-3-faq . This section of the manual will guide you in installing Windows XP-Professional updates. (Thurrott. P, 2010)

If no updates have been previously installed

(i)   If you have not already installed updates doing so is simple. First click on the yellow exclamation mark icon on the bottom right of the taskbar.

(ii)   The Automatic updates window will then appear on the screen (Fig 1). You will be given the option of an Express Install or Custom Install. Select Express Install if you have no specific requirements and press next to continue the updates should then install and the computer will restart. Updates are now installed

Fig 1:

This is the updates window here you can automatically update your OS with the latest Windows XP updates and Service Packs. Select either express install or Custom Install.
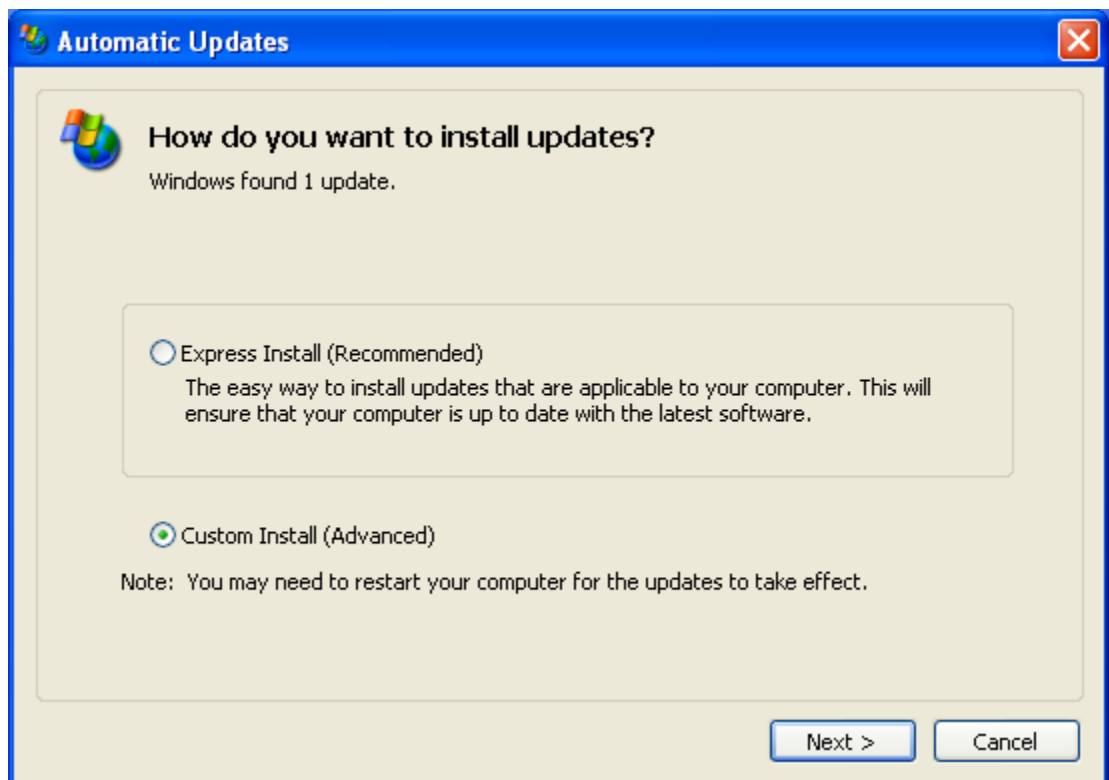
If Updates have been previously installed

(i)   If you have previously installed updates or no yellow icon appears on the taskbar you can

change your automatic update settings by pressing ![start] – ![Control Panel] –

![Security Center] to open the Windows Security Center.

(ii)   In the Windows Security center you can perform many actions with the regards to
updates. By pressing the "automatic update settings" you can enable disable updates,
have the system notify you when updates are being installed. You can also set frequency
of updates (time and day). (fig 2)
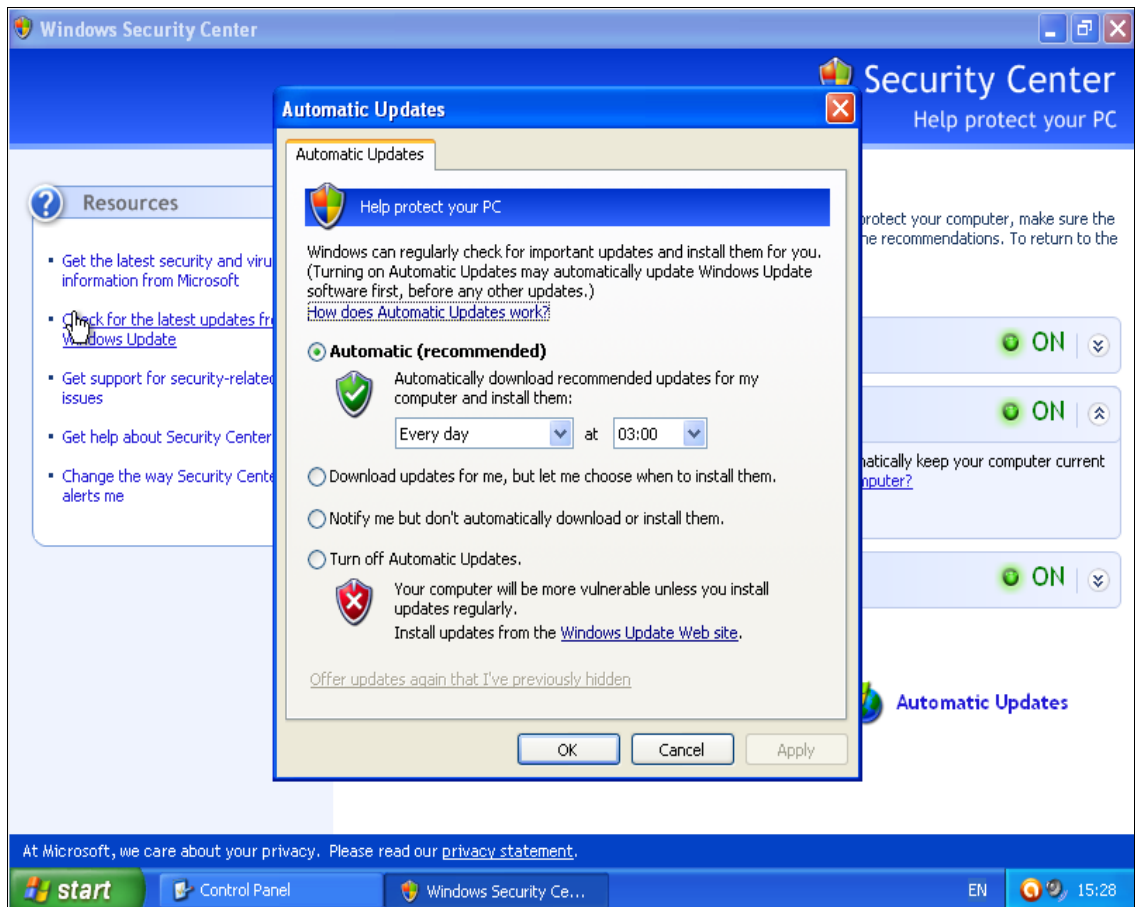
Fig 2:

This is the
Windows Security
Center
(background) with
the automatic
updates settings
(foreground). Here
you can change the
frequency of
updates and other
options.

(iii)   You can also select to check for Windows updates now by pressing the link "Check for
the latest updates from Windows update" (fig 2). The browser will open the Microsoft
website where you can install the updates directly.

A.2.1: Anti-Virus

Computers are prone to many types of viruses if left unprotected these can range from spy-ware to ransom-ware one thing is certain though if you do not protect your computer it will be attacked and the integrity, confidentiality and availability of data compromised. Therefore Anti-Virus programs for operating systems have a multitude of benefits for the home and enterprise user. These include scanning features which search through files looking for malicious programs. When viruses are found the some Anti-Virus programs allow you to Quarantine and Remove such malicious programs from your computer. Anti-Virus software is constantly updated with the latest virus definitions (virus types) in order to find them. In this manual we will show how to install and operate an anti-virus program.

Microsoft Security Essentials

(i)   Microsoft Security Essentials (MSE) is an Anti-Virus Program owned and distributed by Microsoft the creators of the Windows XP Operating System. To install MSE visit http://windows.microsoft.com/en-GB/windows/security-essentials-download and press download. **You need a valid licence key to download MSE.**

(ii)   Press run to continue installation once files have downloaded.

(iii)   The installation wizard will now begin press next to continue. You will be presented with the user licence agreement select "I agree" and next to continue.

(iv)   It will then ask you if no firewall is turned on to turn on the windows firewall click "on" and press continue.

(v)   The installation will now complete and MSE will open. Press Scan now (fig 1) on the right side of the window to scan your machine immediately. Once the scan is completed you will be given a report of the threats and the actions taken by MSE. Your machine is now protected and virus definitions should be up to date such as in fig 1
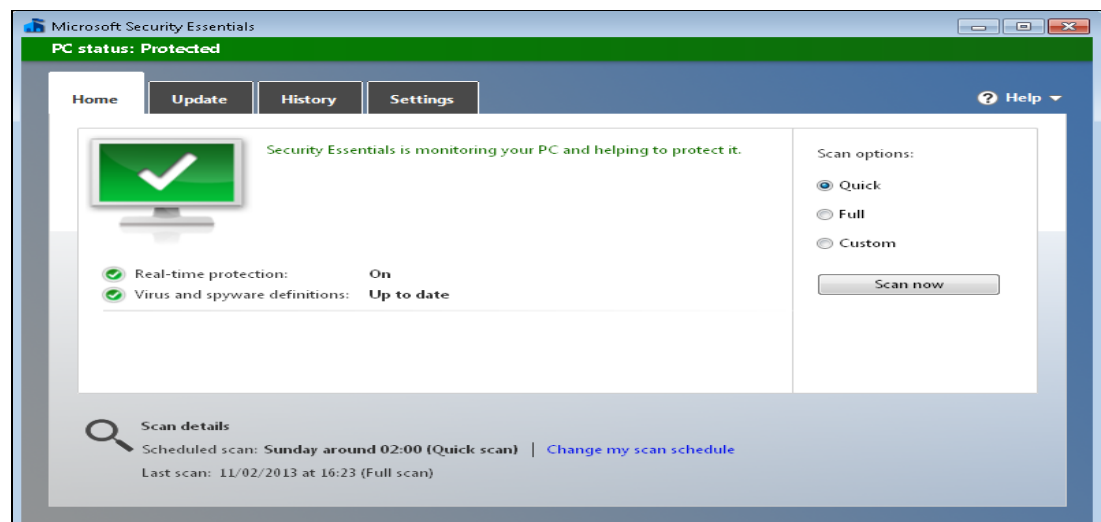
Fig 1:

This is the Microsoft Security Essentials window.

Press Scan Now to scan immediately in quick, full or custom mode

(vi)   MSE is now installed and can be accessed by clicking the icon on the taskbar

Avast Anti-Virus

(vii) If for any reason you are unable to install MSE to your computer (due to invalid security key etc.) or if you want additional security for your machine you can download Avast Free Anti-Virus from the Avast website http://www.avast.com/index

(viii) Press download you will be directed to the next page showing you the paid versions of Avast compared to the free version press download under the free version.

(ix) You will then be redirected to the final download page press download and then run on the popup window to download the files and run the installation.

(x) The Avast Installation wizard will then begin. You are given the option to download Google chrome and/or a Google toolbar for internet explorer select these depending on your requirements and press express install (fig 2) to install Avast.

Fig 2:

This is the Avast anti-virus installation wizard to begin installation press express install to install Avast.

You can also download the Google Chrome Browser and/or a Google toolbar for internet explorer whiles downloading Avast. Select based on your requirements

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(xi) Avast will now install, perform a quick scan and update virus definitions

(xii) To access Avast click the icon next on the taskbar.

A.2.2: Firewall

A firewall is a piece of software or a hardware device that protects your computer or local network from malicious activity over a network such as the Internet such as viruses and hackers. It does this by a number of methods such as Packet filtering, Proxy service and Stateful inspection. The latter is a method of testing key parts of a packet to a database of trusted information and allowing it to be transferred if it is correct (Tyson. J, 2012)**.** The firewall for Windows XP became available after service pack 2 and is a "is a built-in, host-based, Stateful firewall" (Microsoft Corporation, 2012). This section will demonstrate how to turn on the windows firewall.

(i)   Navigate to the Windows Security Center by pressing [start] – [Control Panel] – [Security Center].

(ii)   Next click on Windows Firewall button to open the windows firewall settings menu (Fig 1).

Fig 1:

This shows the Windows Firewall menu located in the windows security center. The firewall should be on to secure your computer
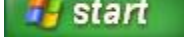

(iii)   If the firewall is not turned on switch it on now and press ok. Windows is now secure.

A.3.0: Creating/Editing User Accounts

User accounts are created in order to make separate profiles for each person who uses the computer. This allows each user to have personalised document and folder settings as well as an individualised visual theme and display e.g. desktop background. This section will demonstrate how to create/edit User accounts for Windows XP-Professional.

Creating User Accounts

(i)   Open the computer management console by pressing ![start] and right clicking the ![My Computer] button and click on manage. (Fig 1).

(ii)   Next press Local Users and Groups to show the dropdown menu and click Users to open the user screen which shows all user accounts (fig 1).
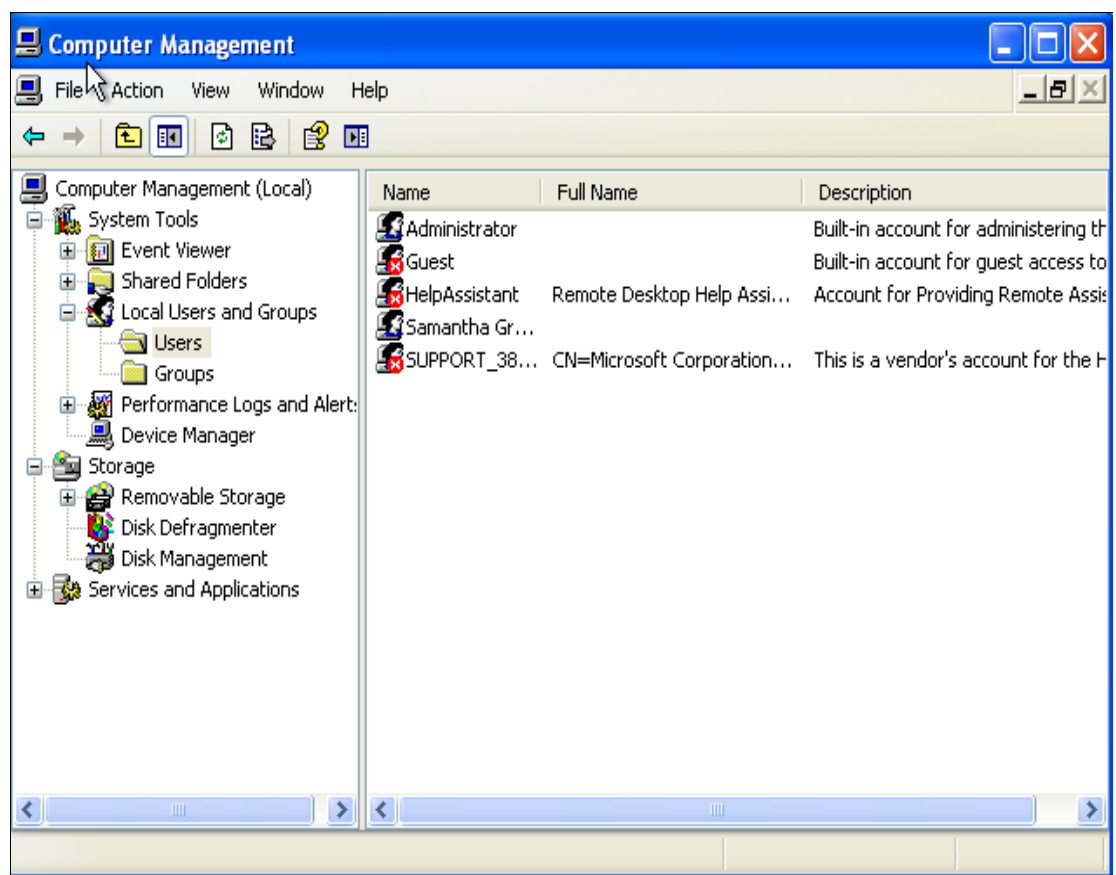
Fig 1:

This is the user account screen in the computer management console.

(iii)   To create a new user account, right click the user account screen and press "New User". This will launch the new user account creation tab (fig 2).

(iv)   Create a username (in this example we use first initial + Surname) this is the name that will appear in the user logon screen after Windows XP boots.

(v)   Next enter the Users full name and their organisation.

(vi) Finally create a password for the user (passwords should be alphanumeric and longer than 8 characters to be effective). Re-enter the password to confirm.

(vii) There other options regarding password as seen in fig 2 Select these options based on your requirements and press ok.

Fig 2:

This shows the new user creation tab

The password options can be seen in the tick boxes underneath the confirm password textbox
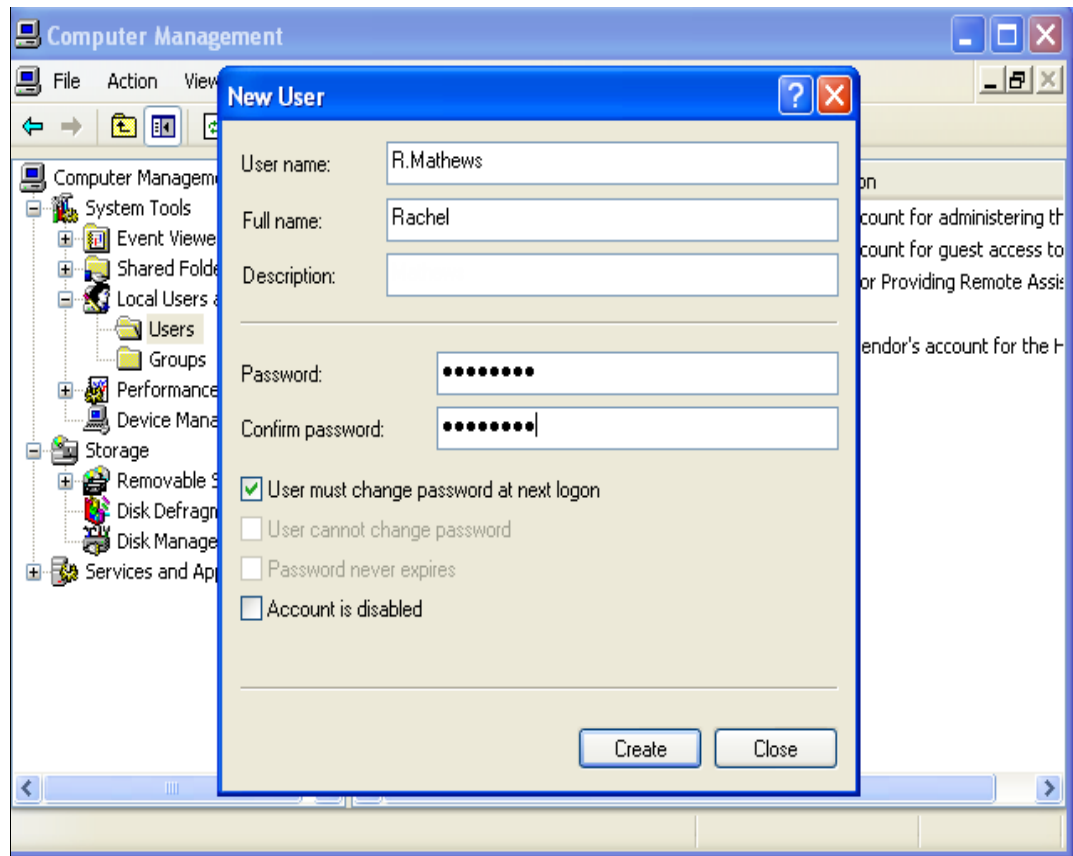

(viii) You have now created a user account repeat these steps to create as many accounts as you need. Note each password and allow the user to implement their own on log in tell them it should be over 8 characters long, use capitals, and not to write it down.

Editing User Accounts

(i) To edit user accounts simply double click the user account you want to change (in the computer management console) to bring up the edit user menu (fig 3) here you will be given the option of editing user information such as password and other password options at your discretion. You can also add and remove the user from groups you have created.
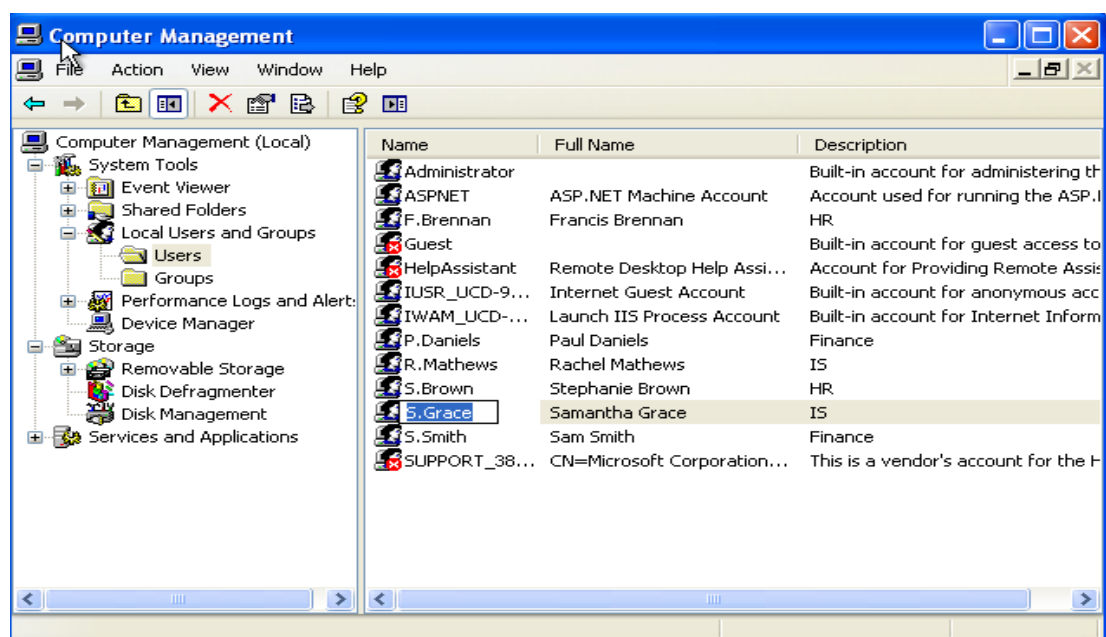

Fig 3:

This is the user edit menu here you can edit a range of user attributes such as name and group membership
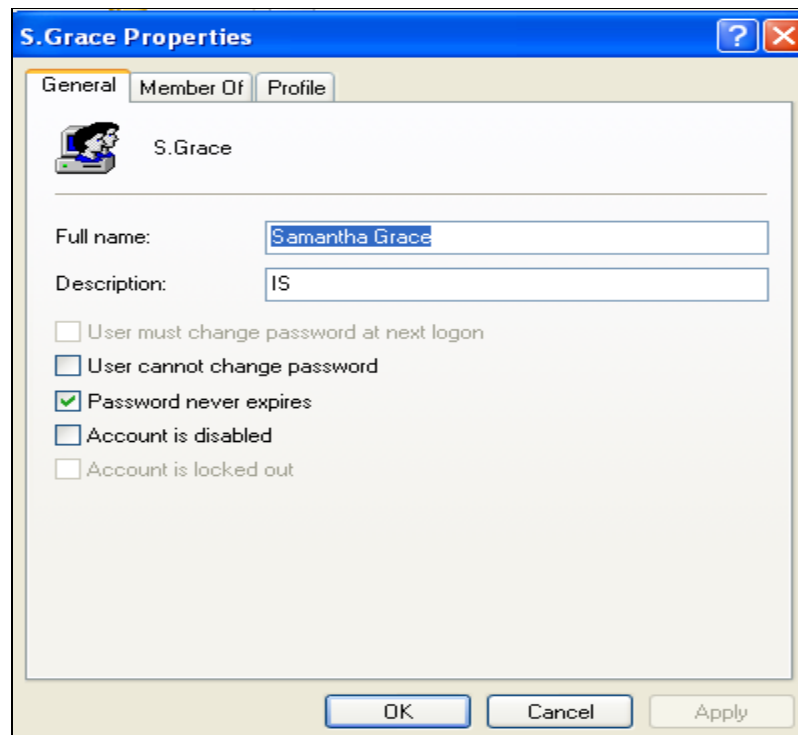
(ii) If you want to edit the do so from the computer management console. Right click the username you want to change and select rename to type the name directly in. (fig 4)

Fig 4:

This shows the user name being edited.

A.3.1: Creating/Editing User Groups

User Groups allow rights to be given en mass to a group of users. Certain groups are created by default e.g. Users (which contains all user accounts). An example of the effective use of groups would a group for each department of a company. You will see the benefit of groups in the next section when we setup folder level security. In this section you will learn how to create and edit user groups.

Creating User Groups

(i)   Open the computer management console by pressing ![start] and right clicking the ![My Computer] button and pressing manage.

(ii)   Next press Local Users and Groups to show the dropdown menu and click the Groups tab to open the Groups screen which shows all Groups (fig 1).

Fig 1:

This shows the groups page in the computer management console.

To create a new group right click the group's page on the left and select the new group button.
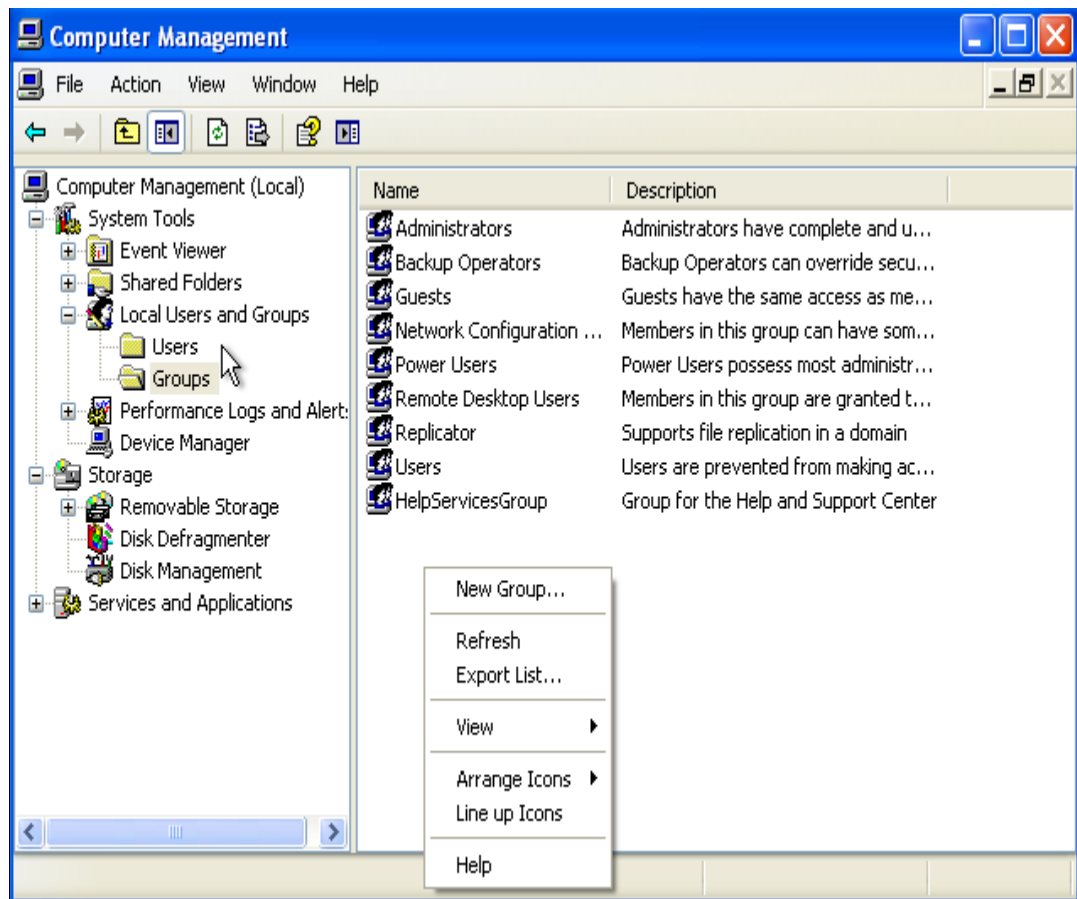
(iii) Right click the Groups page and select the "New Group" button as seen in figure 1 to open the New Group creation panel.

(iv)   Now enter the Groups name and optionally a description of the Group.

(v) Next add users to the group by pressing the "add" button. This will launch the select user screen (fig 2) type the name of the user you want to add in the textbox and press "check names" then press ok to add the user
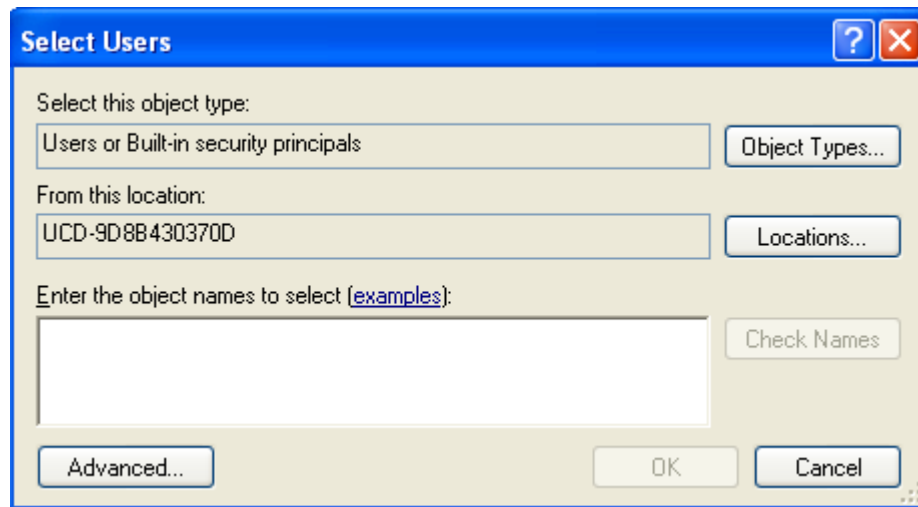
(vi) After adding all the users you need in the group (You can add more later) press ok to continue and create the group.

(vii) Repeat these steps to create as many groups as you require remember that users can be in multiple groups concurrently.

Adding/Removing Members of User Group

(i) You can add more users to groups you have created by double clicking on the group you want to edit in the computer management console. This will launch the group edit window (fig 2).
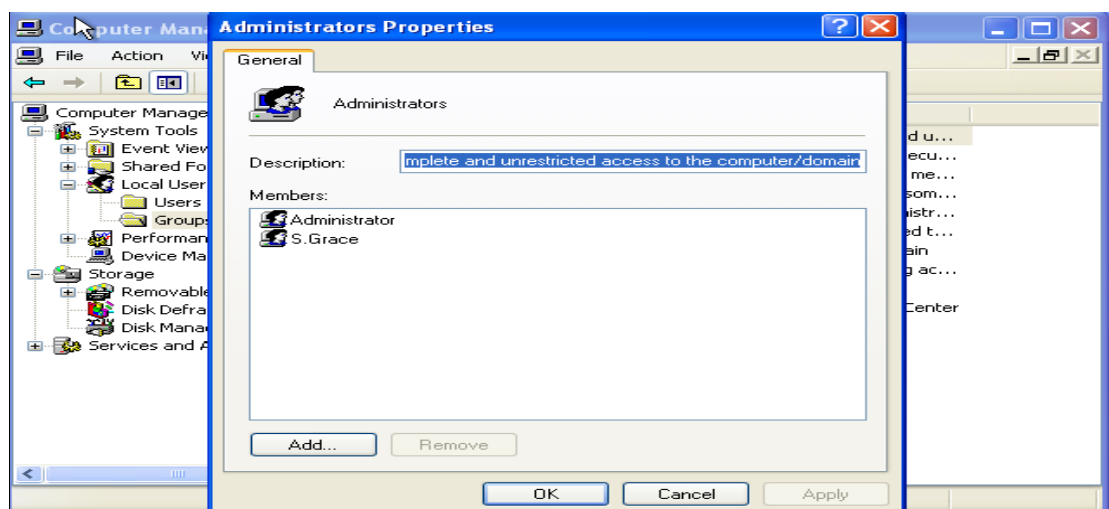
(ii) To remove a user in a group simply select the user and press remove.

(iii) You can add users to the group by pressing the "add" button. This will launch the select user screen (fig 1). Type the name of the user, press check names and then ok to add a user

(iv) Press apply to apply these changes and press ok to close the group properties window.

(v) To change the group name simply right click the selected group and press rename then type this name onto the screen similar to fig 4 in step A.3.0.

A.3.2: Creating User & Group Folders

In this section you will be shown how to create folders which can have access blocked or granted based on the users account or their group membership. For example you may have a department folder that is accessible to all those in the department group inside there are subfolders only accessible to a specific user and not the group as a whole.

Enabling Folder Security.

(i) To allow folder level security options you must first turn off "simple file sharing" and be sure the partition you want to work with is formatted with NTFS (Such as the second partition formatted in section A.1.4).

(ii) To allow folder level security options begin by pressing [🏁 start] [Control Panel].

(iii) In the Control Panel screen switch the view to "Classic view" on the left side (see figure 1).

(iv) Now Press [Folder Options] this will launch the folder options menu (fig 1).

(v) Next press the View tab to open here you should see a list of options you can enable for folders scroll to the bottom and untick "Use Simple File Sharing" (fig 1). This allows folder level security **if a drive has been formatted with NTFS**.

Fig 1:

Here you can see the control panel in classic view with the folder options button (background)

The Folder options View menu is also visible with "Simple file sharing unticked (foreground).
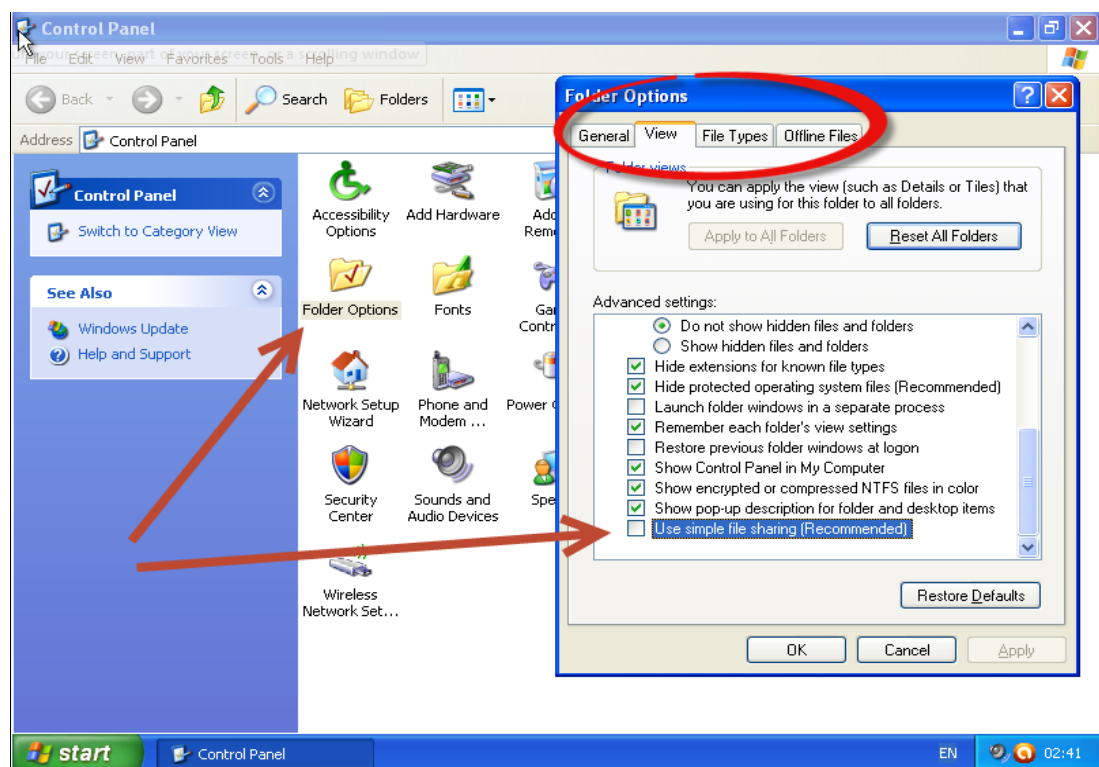
Implementing Folder Security

Now that you have enabled folder security we will set up a folder that can only be accessed by specific groups or user accounts for example a department folder only accessible by a specific department and the administrators group but inside that department folder there is a user folder which is only accessible to a specific user in that group (plus the administrator).

(i) First go to the drive you want to create the secure folder (Remember it needs to be formatted with NTFS to allow security options). Do this by pressing ![start] - ![My Computer] and press the Drive letter e.g. drive E:.

(ii) Next right click the white area and press "New" and then "New folder". This will create your first folder (give it the departments name).

(iii) Now right click that folder and press properties. In the properties menu press the security tab at the top (fig 2).

(iv) You will see a list of many users and groups who currently have access such as Administrators and the Users group among others (see figure 2).

(v) Next stop the group inheriting parent permissions from the drive which in this case allows all users access. Press the "Advanced" button to bring up the advanced settings menu, here untick the box at the bottom which says "Inherit permissions from parent".

Fig 2:

This shows the security menu in the folder properties box at the top is the security button.

The middle arrow points to the current list of users/groups allowed access.

At the bottom is the advanced button to access the advanced settings menu
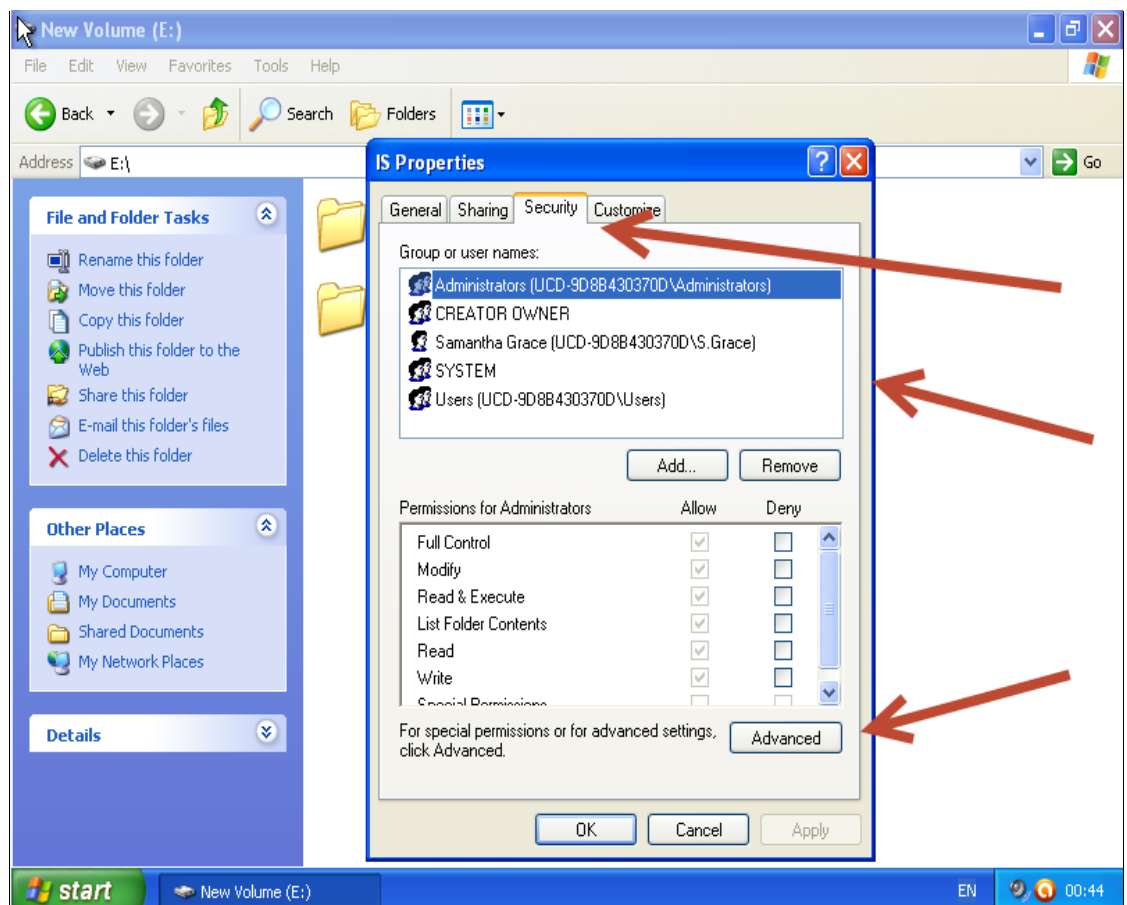
(vi) A command box will appear asking for you to either copy the parent permissions to the folder or remove them. Press Copy, then press apply and ok.

(vii) Now simply remove any users/groups you do not want to allow access in our example all groups except Administrators. Do this by clicking on the group and pressing "remove".

(viii) Next Add a group by pressing add. In the command box that appears type in the group or user name and press check names. Click add and the group/user will be added to the list of groups and users (fig 3).

(ix) Finally manipulate the rights of the groups/users you added (you can give them or deny rights). For example we have given both the administrators group and the person who owns the folder full access rights (fig 3). You can allow groups or users limited rights such as read only or list folder contents. To control the permissions highlight the group/user and tick the appropriate permissions box.
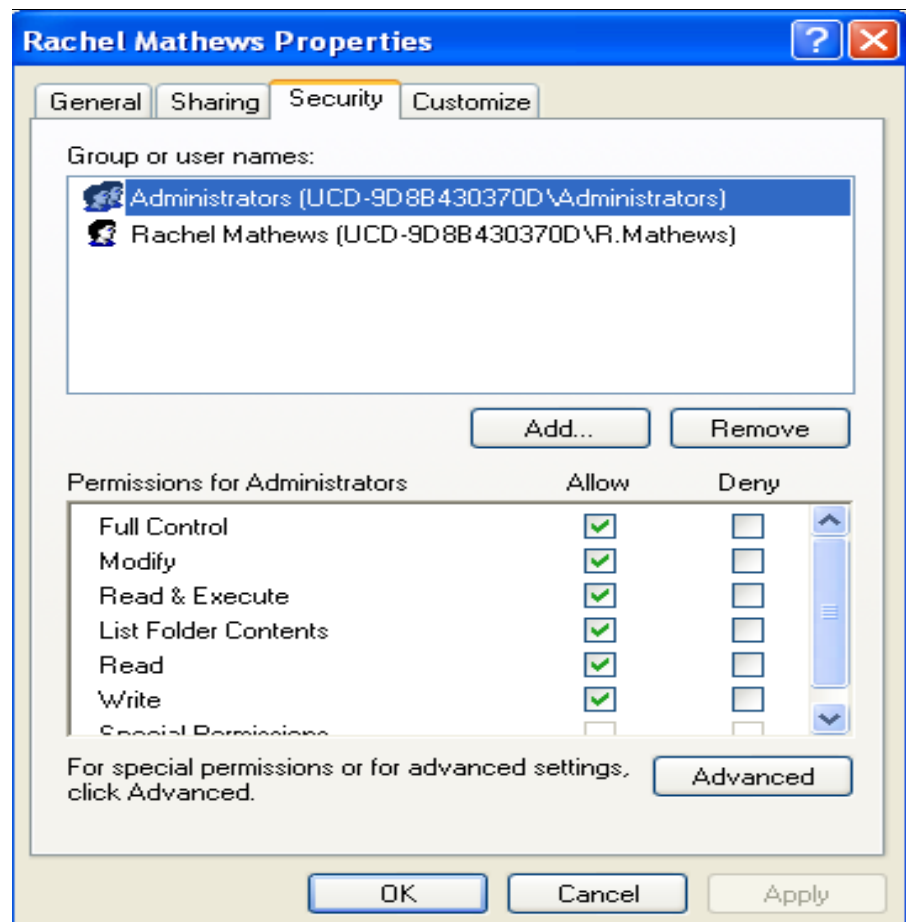
Fig 3:

This list shows the groups/users whose access is being controlled at the top

The bottom shows a list of permissions for example the Administrators group is allowed full access as well as the user Rachel Mathews

(x) Repeat theses steps with all your folders allowing full or limited access to the right users or groups. This will greatly help both the integrity and confidentiality of the users data.

## A.3.3: Sharing Folders to Groups & Users

The availability of your folders and documents is important especially within an organisation. A user may want to access their files and folders remotely or through the local network. Windows XP allows for file sharing over a local network. This section will demonstrate how to share folders to other users on a network and apply share permissions. Applying share restriction and permissions to a folder applies it to all sub folders and files within the folder, therefore to make you system secure apply the folder share restrictions you want to each subfolder.

(i) Firstly if you have not done so previously you will need to untick "Use simple file sharing" to do this follow the guide in the A.3.2 "Enabling folder Security" section.

(ii) Now open the folder properties window by right clicking the folder you want to and then click properties. Next press the sharing tab to open the folder share properties window.

(iii) To configure sharing we first need to tick the "Share this folder button" as seen in fig 1.

(iv) Now you can change the name of the share or leave it at the default of the folder name.

(v) You are also given the option to limit the number of users of a share or select Maximum Users.(fig 1)

(vi) Next select the permissions button (fig 1) this will launch the share permission options screen. Here there is a list of users and groups. Add or remove users and groups to the list.

(vii) To manipulate the level of access select the user/group from the list in the previous step and click on the share permission you want to apply to the user/group as seen in fig 1. In this example we share the Department IS folder to the administrators and the IS department group.

(viii) Close all windows by pressing apply then ok.(fig 1)

(ix) Repeat these steps for each folder and sub folder you want to share and restrict over a local or remote network.

Figure 1:

This shows the share properties menu (left of screen) note the share this folder button and the permissions button

On the right is the Permissions window with a list of users/groups you have chosen to allow or deny share permissions.
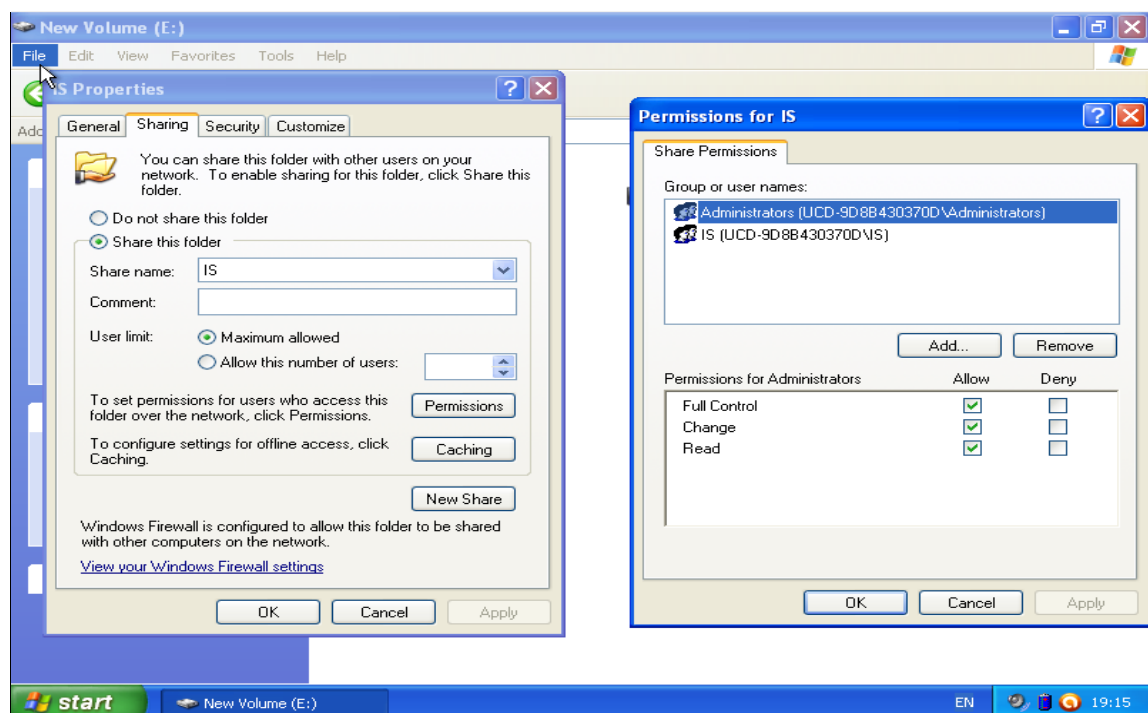
A.3.4: Blocking Access to a Website

In a work or home environment you may want to block access to a website this could be due to employees procrastinating by going to media websites. There are a number of ways we can do this by downloading third party programs, downloading browser add-ons (stay focused), manipulating the firewall, changing the registry however an easy way to block a website on all browsers is by editing the host file. The host file is a plain text file in Windows XP which maps host names (website names) to IP addresses. This section will guide you in using the host file to block websites.

(i) Press **[start]** and then **[Search]**. Next click the "all files and folders" then type
   C:\Windows\System32\Drivers\etc\hosts and press "search".

(ii) In the search results right click on the "hosts" file and click properties. If the file is marked read-only untick this now.

(iii) Now right click the "hosts" file again and click "open with" a list of programs you can open the hosts file with will appear select "notepad".

(iv) To block a website look at the bottom under where it says 127.0.0.1 local hosts press return to go to the new line and type 127.0.0.1 and the websites domain name e.g. 127.0.0.1 www.facebook.com. This will block access to Facebook on all browsers. (Fig 1).

(v) To block more than one website simply press return and type 127.0.0.1 <website name> for each website (see fig 1).

(vi) To test if the website has been blocked go to your browser(s) and enter the website address you will find it is inaccessible.

Figure 1:

This shows the host file opened in notepad (foreground) 3 websites have been blocked at the bottom by pointing there domain names to 127.0.0.1 theIPv4 loop back address
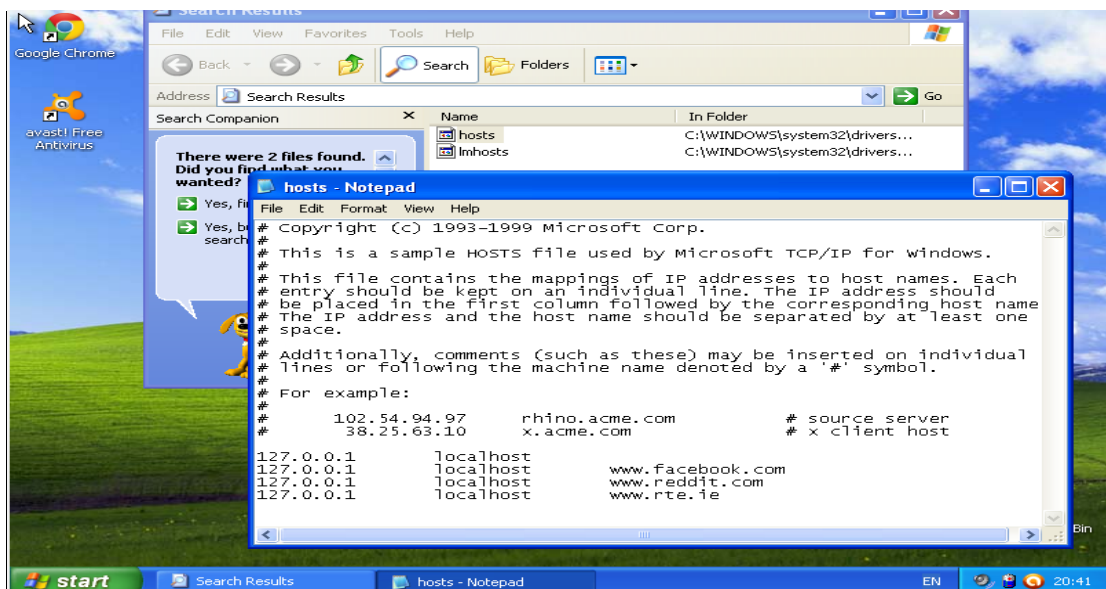
- **Tip:** As you block websites also block popular proxy server websites on the first few pages of the Google search list for proxies or free proxies. People use these to circumnavigate restrictions you've put in place to block websites. These work by accessing the website through another server and the transmitting the content back to the user.

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A.4.0: Remote Connectivity Setup

Remote desktop connection is an inbuilt Windows XP-Professional program that allows other users to connect and control your computer remotely from another machine through a local network. A useful example of remote connectivity is if administrators need to login to your machine to fix a problem they can now enter the IP address of your machine and login over the local network to see what is wrong and rectify it. Remote Connectivity uses RDP (remote desktop protocol) a protocol in the TCP suite (Transfer control protocol) this allows access through port 3389, the RDP default listening port. In this section we will setup remote connectivity and change the RDP default port from 3389 to an unused port to slow down hackers if they attempt to attack your computer

Turning on remote desktop

(i) Press **start** - **Control Panel** and then switch the Control Panel to classic view. Next

Press **System** to launch the System Properties Window and press the Remote button as seen in fig 1.

Fig 1

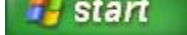This is the system properties window found in the control panel.

To enable remote desktop click the "allow users to connect remotely to this computer" button
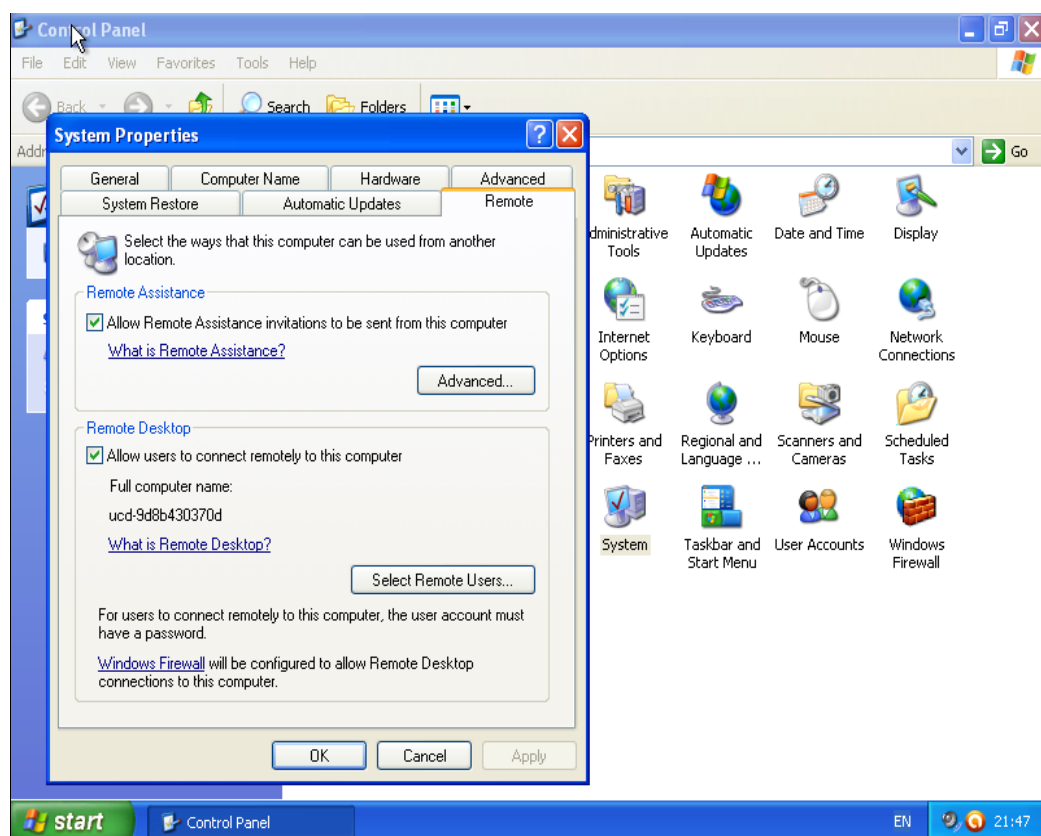
(ii) Now tick the box under the remote desktop heading which says "Allow users to connect remotely to this computer" (fig 1)

(iii) To add which user accounts which can use remote access press the "select remote users" button.

(iv) This will launch a pop up window where you can add or remove users. Members of administrator group have remote access privileges enabled by default.

(v) Finally press Apply and then ok. Remote Desktop is now enabled.

Changing the default port for Remote Desktop

(i) To change the default port number for remote desktop press ![start] – ![Search] - "All files and Folders", then search for "regedit". Click regedit.exe to launch the registry editor.

(ii) Now navigate to HKEY_LOCAL_MACHINE – System – Current Control Set – Control - Terminal Server – WinStations - RDP-Tcp (fig 2).

(iii) Scroll down through the folders contents and right click "port" and press "modify" (fig2)

(iv) Change the base decimal number to an unused port number such as 52040 and press ok.

(v) Close the registry and all other programs then restart your computer for this to take effect.

Fig 2:

This is the registry editor (foreground) here the port number .reg file is modified to change the RDP port number
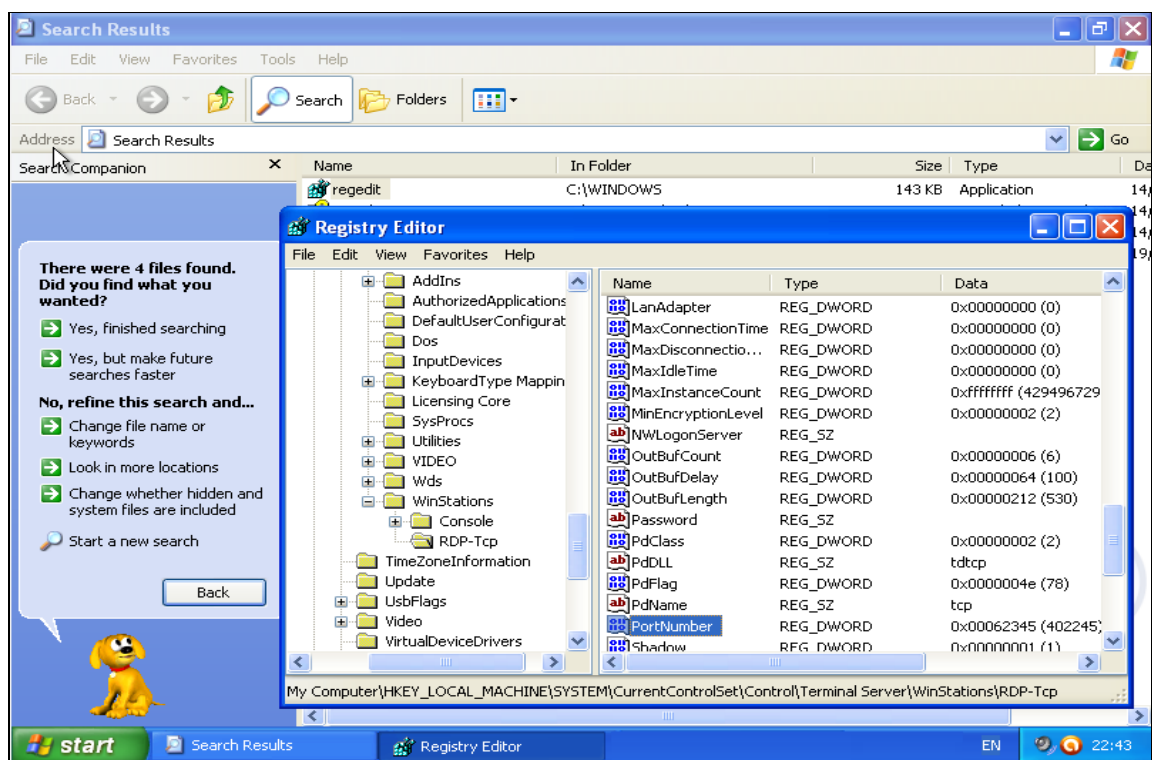
(vi) You will also need to allow this new port through the Windows Firewall. To do this press ![start] – ![Control Panel] –![Security Center]. Click on Windows Firewall settings and press the Exceptions button.

(vii) Here you will see a list of listening ports that are open through your firewall (fig 3). Note that remote desktop is allowed through the firewall however we have now changed the port for remote desktop so we must now open the correct port and close the old port. Do this by deselecting the box that says remote desktop.(fig 3)

(viii) Now click on the add port button (fig 3). This will launch the Add port dialog box where you can enter a name for the port e.g. remote desktop changed. You will then have to enter the new remote desktop port. Press ok and press ok on the firewall settings the port has now been changed to a new listening port for remote desktop protocol.

Fig 3:

This is the windows firewall exceptions menu it shows all listening ports including the old RDP port (unticked), the new RDP port that has been opened and the Add port button.
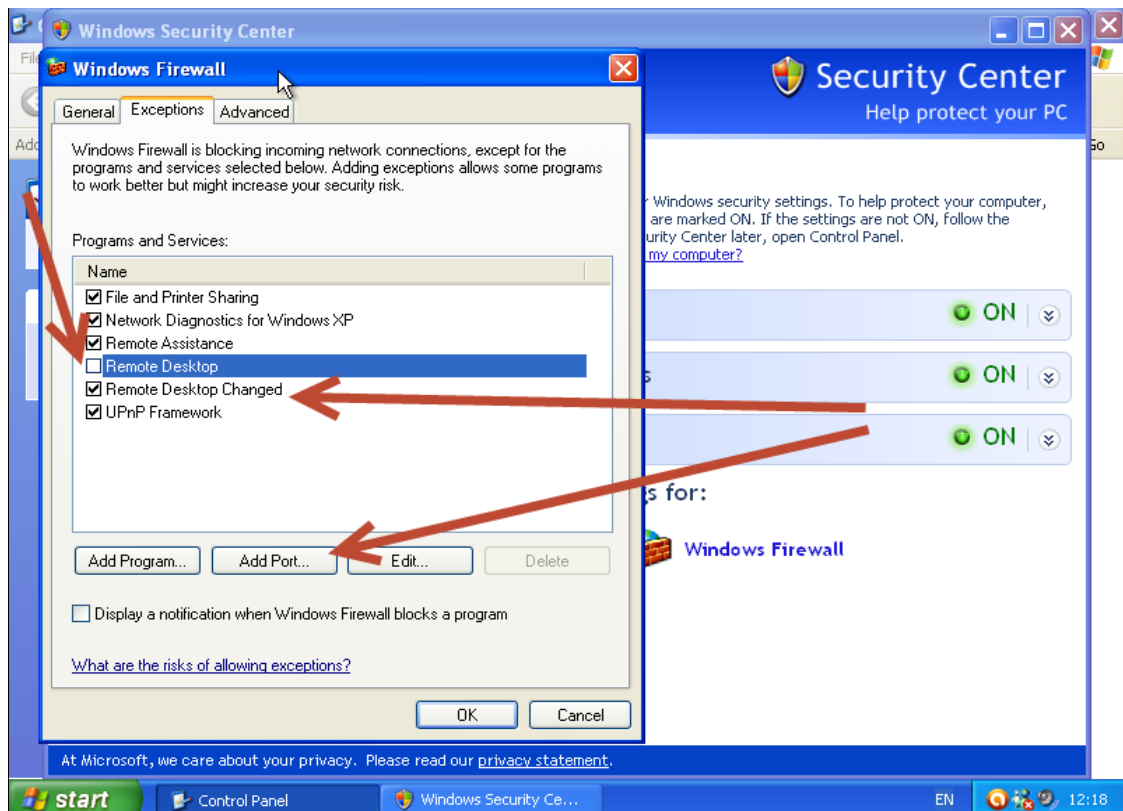
Connecting to your computer using Windows Remote Desktop

(i) In this section you will need another computer with a Windows operating system to remotely connect to your computer. Not all windows operating systems allow remote connection Windows XP-Home edition and certain versions of Windows Vista for example. To check if your operating system can use remote connection please visit, http://windows.microsoft.com/en-IE/windows-vista/Connect-to-another-computer-using-Remote-Desktop-Connection.

(ii) You will also need to know the IP address or name of the computer you want to remotely connect to you can find the IP address by pressing ![start] – ![Search] and – "all

files and folders" then search for "cmd". Click on cmd and type "ipconfig". Next to where it says IPv4 address, take note of the address it will be in format 192.168.1.10.

(iii) Finally you must also be on the same local network to remotely connect to your computer

from another .To open Windows remote desk connection press ![start] – ![Search] - "all files and folders" and search for "Remote Desktop"

(iv) This will launch the remote desktop connection window (fig 4) here type the IPv4 address of the computer you want to connect to, colon the port you have changed for remote desktop (fig 4) Press connect and you will be connected to the new computer, login with your username and password.

Fig 4:

This is the remote desktop connection address and port entry box note address:port format to use RDP in not default (3389) port
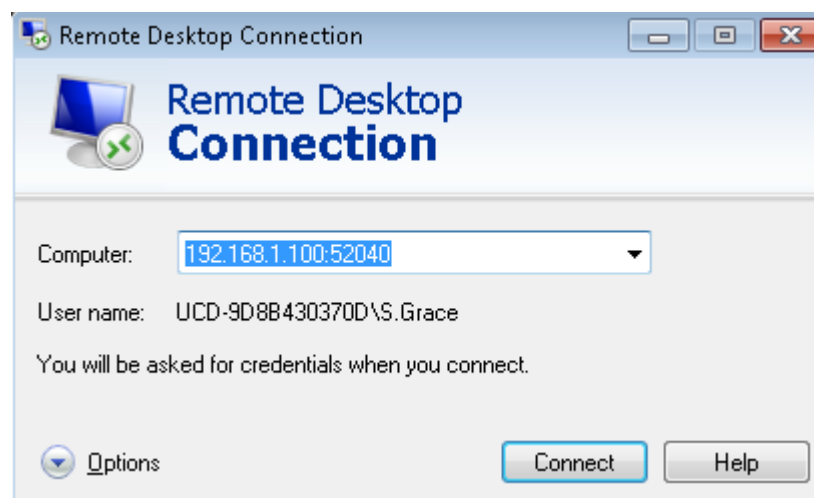
A.5.0: Implementing a Static IP Address

All computers if they are connected to a network have an Internet protocol address (IP address). This address identifies each separate computer on the network. There are two ways a computer on a local network can acquire its address the first (default method for Windows XP-Professional) is dynamically through Dynamic host configuration protocol (DHCP). DHCP is a mechanism used to automatically assign IP addresses within a range to any computer that connects to the network

The alternative method IP addresses are assigned is statically. This involves manually configuring the machines IPv4 address, the subnet mask, the default gateway and the two domain name servers (These change the site name e.g. www.google.com into the address e.g. 74.101.84.6.

Statically assigning IPv4 addresses can lead to IP address conflicts which can stop machines connecting an obstacle DHCP avoids by making sure each machine is given a different IP address. The benefits of statically assigning IP addresses are that if you are using TCP protocols such as remote desktop protocol (see section A.4) you can always identify and connect to that machine as it will have the same address. There are also security benefits for home/small business networks in that machines must have a certain address to connect to the network (addresses that you have pre-set). In this section you will turn off dynamic addressing and statically assign your computers IP address.
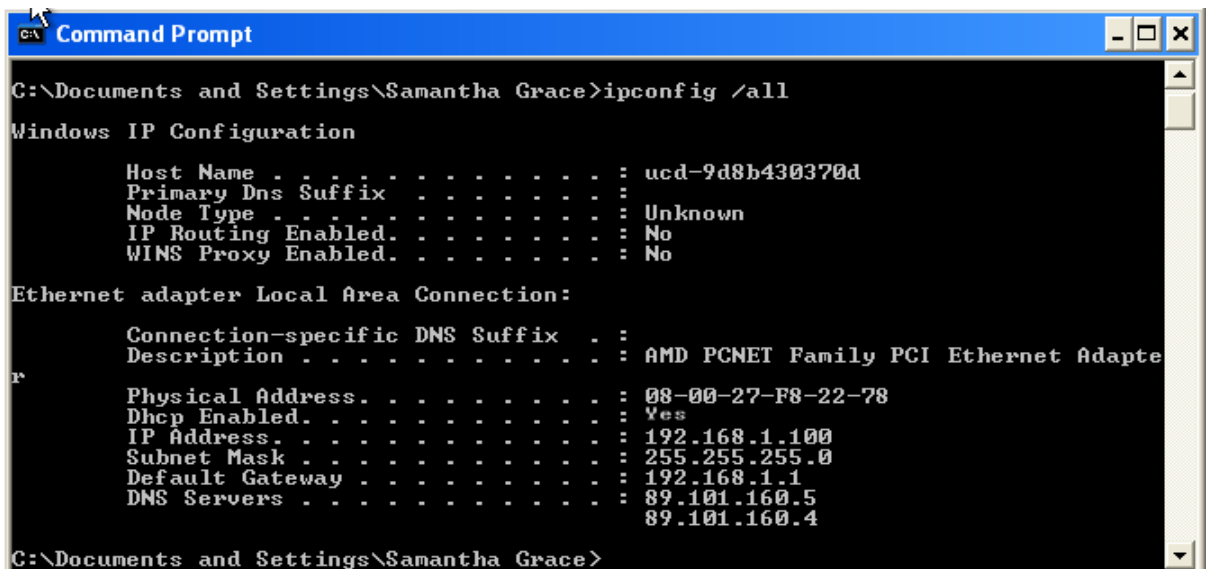
Finding out your current network details

(i) Before you change your network to a statically assigned IP address it is wise to make note of your current network configurations such as the DNS servers, the subnet mask and the default gateway. To begin press **start** – **Search** - "all files and folders", search for "cmd" in all files and folders. Click on cmd in the search results this will launch the command prompt window (fig 1).

Fig 1:

This is the command prompt window.

Ipconfig /all is used to find the settings of your network such as subnet mask, DNS servers and Default gateway

(ii) Now type "ipconfig /all" this will bring up your current network details. Make a note of your subnet mask, your default gateway and your DNS servers and close the command prompt window. You are now ready to set up your machine with a static IP address.

Setting up a Static IP address for your machine

(i) First press ![start] – ![Control Panel] and change the layout to classic view on the left side of the screen.

(ii) Next open Network Connections and right click the icon called local area connection. Click on properties to open the Local area connection properties window.

(iii) Click on Internet Protocol (TCP/IP) this will launch the Internet Protocol (TCP/IP) properties window as seen in fig 2.

Fig 2:

This is the Internet Protocol TCP/IP properties menu. Here you can set your OS to use a dynamic or static IP address
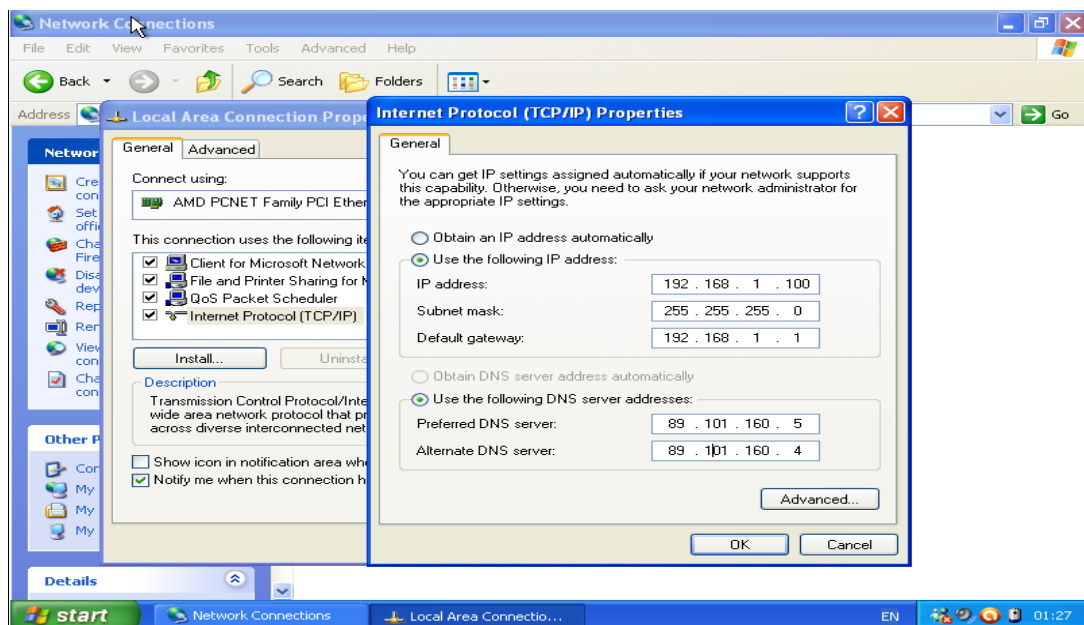
(iv) As you can see dynamic connectivity is currently enabled where it says "Obtain an IP address automatically" however we would like to use a static address so press the "Use the following IP address checkbox".

(v) Now enter the local network address you want your computer to have this is what identifies your machine on the local network in this example we used the IP address 192.168.1.100.

(vi) Next enter the subnet mask see notes on Classful addressing. If you are on a home or small business network you will most likely be on a class C network. In this example we are also using a class C subnet so type 255.255.255.0

(vii) Now type in your computers default gateway this is a node on your network that connects your device to an outside network such as the internet. Remember that it should be on the
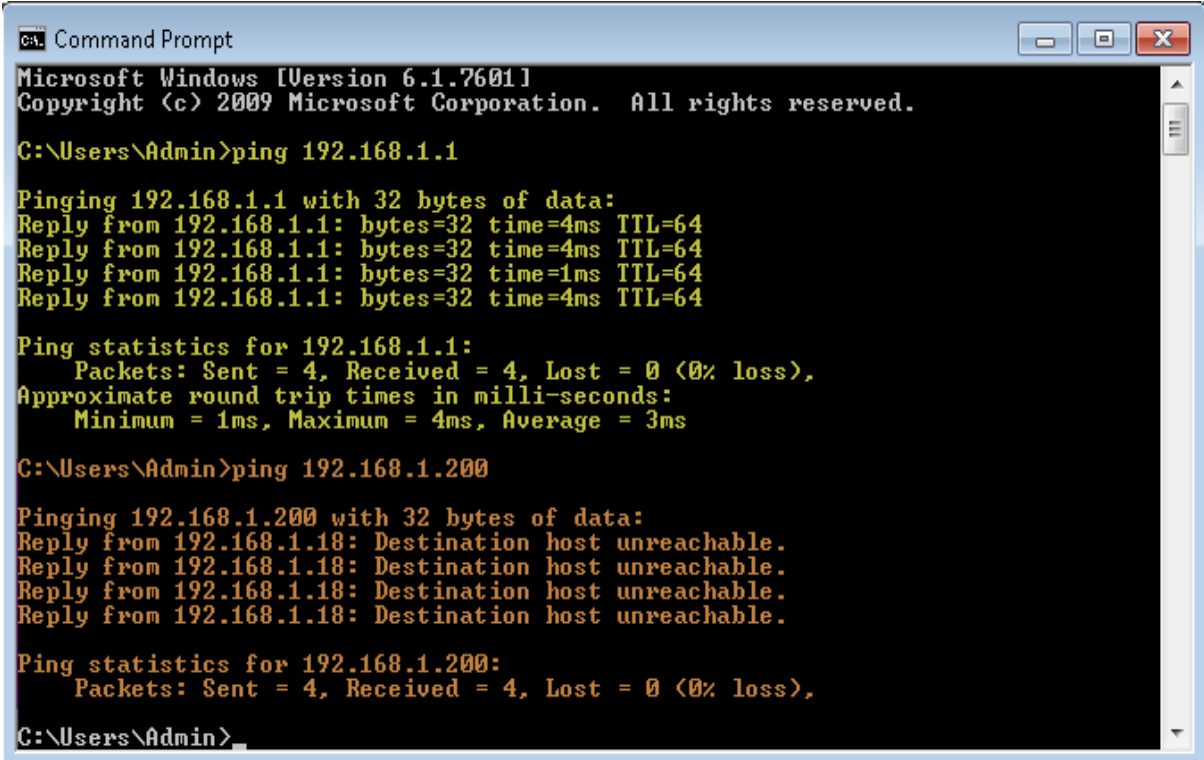
same network you are assigning your machine to so if your IP and subnet are the same as above examples it would be 192.168.1.1 etc.

(viii) Now enter the addresses for two DNS servers. You can enter the DNS servers you were already using (see previous section) or you can perform an internet search for other DNS servers in your area, we used the servers at 89.101.160.5 and 89.101.160.4.

(ix) Press ok to close the both properties windows. Your machine is now configured to use a static IP address in your local network. To test this open the command prompt window type ping then your network address e.g. "ping 192.168.1.1" this well send 4 packets of data to the other machine. If you get 4 replies your machine is configured properly. If not the request will time out and it will say the host is unreachable. (fig 3)

Fig 3:

The yellow writing shows a successful connection with the router using the ping command

The brown writing shows an unsuccessful connection as the host address is unreachable (it does not exist yet)


```
Command Prompt                                                    [ - ][ □ ][ X ]
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\Admin>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=4ms TTL=64
Reply from 192.168.1.1: bytes=32 time=4ms TTL=64
Reply from 192.168.1.1: bytes=32 time=1ms TTL=64
Reply from 192.168.1.1: bytes=32 time=4ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 4ms, Average = 3ms

C:\Users\Admin>ping 192.168.1.200

Pinging 192.168.1.200 with 32 bytes of data:
Reply from 192.168.1.18: Destination host unreachable.
Reply from 192.168.1.18: Destination host unreachable.
Reply from 192.168.1.18: Destination host unreachable.
Reply from 192.168.1.18: Destination host unreachable.

Ping statistics for 192.168.1.200:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

C:\Users\Admin>
```

A.6.0: Optimising Performance of Windows XP-Professional

In this section you will be shown how to optimise your Windows XP-Professional system for maximum performance. We will do this by modifying the swap/page file and measure its effect using the Novabench benchmarking tool to measure the effects on performance standards.

The terms swap and page file are often used interchangeably however they are actually both similar but separate processes. A swap file is a type of memory called "virtual memory" that swaps the process from the system memory i.e. the RAM to the hard drive. Swap files swap the entire process from the system memory to the hard drive which is slower. The theory behind them is that it allows for more applications as memory is freed up however swapping the whole process can make the machine run very slowly as it has to retrieve process from HD to use that is why since Windows 95 pages files have been used. (Woodward. M, 2012)

Page files are similar to swap files they are a form of virtual memory. The key difference that separates them from swap files is that when they move the process from system memory to the hard drive they leave the space for the process in the system memory and either move the whole process out if space is needed or can quickly page the files back into the system memory quickly if the process is restarted. An example of this is minimised windows when not being looked at are put into page files and called back to system memory if needed or whole process moved if not and space is needed. (Woodward. M, 2012)

Installing Novabench performance benchmarking tool

(i) Novabench is free and can be downloaded from the Novabench website http://novabench.com/download.php be sure to download latest and correct version for your operating system. In this example we are using x86 or 32bit version. You may also need to download the Microsoft .NET 2.0 framework to run Novabench here http://www.microsoft.com/en-ie/download/details.aspx?id=1639 and follow the onscreen instructions

(ii) When the Novabench is downloaded double click on it in the download's folder or at the bottom of your browser screen to begin. Novabench installation wizard will then launch.

(iii) Press next and agree to the user licence agreement, you will enter the folders locations leave this at the default. Then Novabench will ask you what you would like to call the start folder it will be stored in leave this at the default also.

(iv) Novabench will then install this may take up to 5 minutes. Once installation is complete press finish and Novabench benchmarking performance tool will launch.

Modifying Page files and measuring performance effects

(i) First run a baseline test to see the current performance of your machine. Open Novabench and press tests and click run without GPU test this may take some time. (fig 1)

(ii) When it is finished press save and you choose a file name and folder to save it in. (fig 1)

Fig 1:

This is the NovaBench results page you are given an overall score and a score on each of the different component in the machine such as RAM, CPU and other Hardware.

You can save these results to view later by clicking the save button on screen
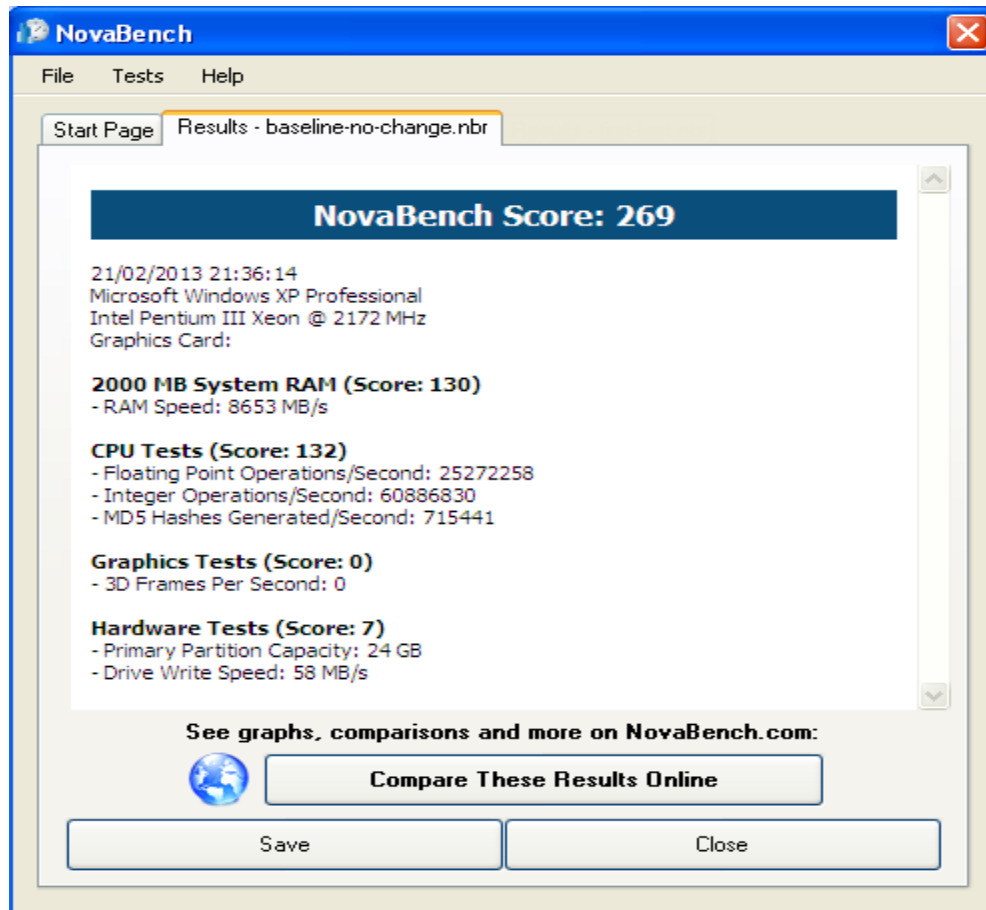
(iii) To modify page files press – .

(iv) In the system properties window click on the Advanced tab and press the settings button under the performance heading, this will launch the performance options window.

(v) In the performance options window press Advanced and then the change button under the virtual memory heading. This will open the virtual memory window here you can change the page file size you want your machine to have to optimise performance. (fig 2)

Fig 2:

This shows virtual memory window here you can modify page file size by increasing or decreasing the Initial size and Maximum size and pressing set then ok
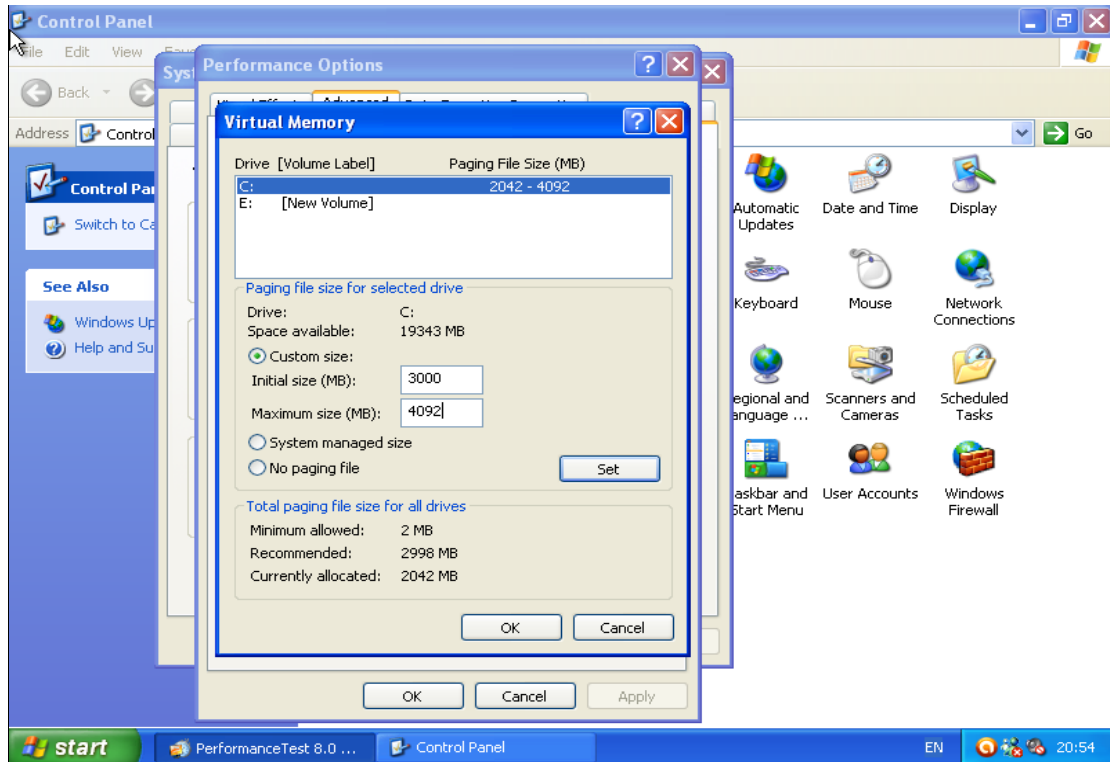
(vi) Change the page file size to 1.5 times the size of your RAM

(vii) Close all programs and repeat the performance test using Novabench this will allow us to see the benefits of modifying page files.

Example Performance Findings

- We performed with Novabench performance test before modifying page files to give us a baseline to compare to.

- Next we increased the initial size of the page file to 1.5 times the RAM of the machine we were running Windows XP-Professional on. This was 2000MB of RAM page files increased from 2042MB to 3000MB

- We then repeated the performance test using Novabench. The results of both tests are displayed in fig 3.

Base line Test	Fig 3	Post Page file increase

NovaBench Score: 269

21/02/2013 21:36:14
Microsoft Windows XP Professional
Intel Pentium III Xeon @ 2172 MHz
Graphics Card:

2000 MB System RAM (Score: 130)
- RAM Speed: 8653 MB/s

CPU Tests (Score: 132)
- Floating Point Operations/Second: 25272258
- Integer Operations/Second: 60886830
- MD5 Hashes Generated/Second: 715441

Graphics Tests (Score: 0)
- 3D Frames Per Second: 0

Hardware Tests (Score: 7)
- Primary Partition Capacity: 24 GB
- Drive Write Speed: 58 MB/s

NovaBench Score: 269

21/02/2013 21:39:30
Microsoft Windows XP Professional
Intel Pentium III Xeon @ 2172 MHz
Graphics Card:

2000 MB System RAM (Score: 131)
- RAM Speed: 8887 MB/s

CPU Tests (Score: 132)
- Floating Point Operations/Second: 25268244
- Integer Operations/Second: 60949763
- MD5 Hashes Generated/Second: 723385

Graphics Tests (Score: 0)
- 3D Frames Per Second: 0

Hardware Tests (Score: 6)
- Primary Partition Capacity: 24 GB
- Drive Write Speed: 51 MB/s
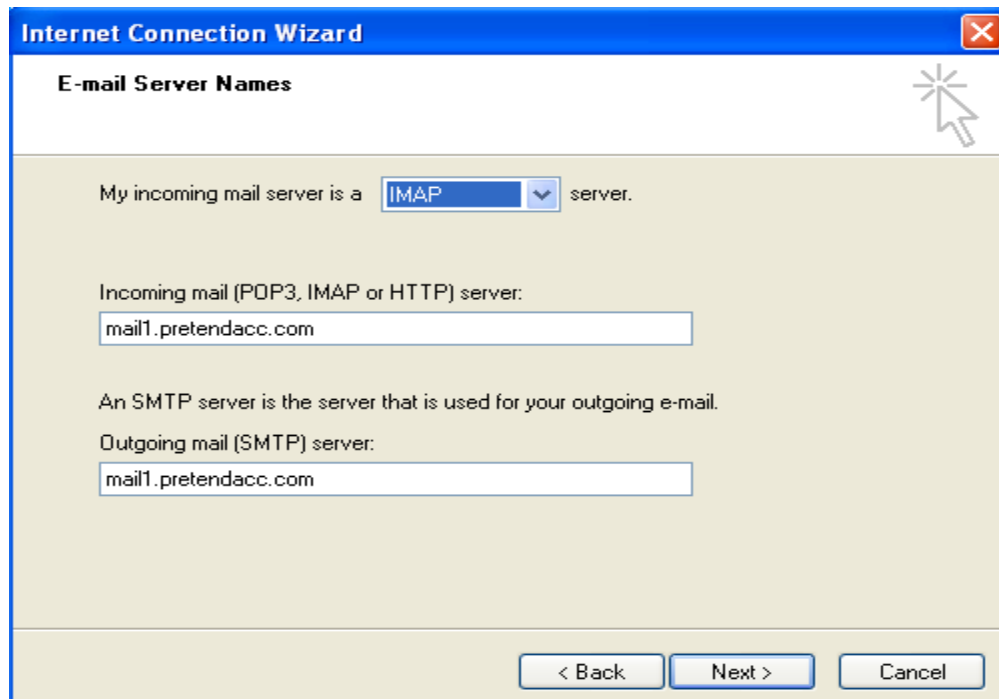
(vii)   As you can see in figure 3 the overall score did not change but pay closer attention to the RAM and you'll notice a 1 point increase in its overall score and its speed has increased from 8653 MB/s to 8887 MB/s this represents a small but significant increase in the speed of the RAM as it means that RAM could run faster due to page files size being increased.

(viii)   The CPU scored the same overall as we expected. We did not perform a graphics test. The hardware has decreased by 1 point overall but if we examine this closely the Drive write speed has decreased from 58 MB/s to 51 MB/s this is negligible amount but it is logical as Page files are also being written the hard drive. The increased page files are competing for write speed with the normal data being written to the drive.

(ix)   Overall we have shown that increasing your page file size to 1.5 times the size of your RAM increases your RAM speed considerably more than it lowers drive write speed. Experiment yourself further to find the optimum page file size for your system.

A.7.0: Setting up an Email Client

In this section you will set up an email client and configure it to use an IMAP server. The pre-installed email client for Windows XP-Professional is Microsoft Outlook Express 2002. Setting up an email client is a relatively simple process which allows you to send, receive and read messages. This works seamlessly for the user, there are however a variety of mechanisms supporting this technology. Your email client must connect to a server. To send a message your email client will connect to a server using SMTP (simple mail transfer protocol) this allows the email to be sent to the correct address. To receive a message your email client will connect to a server using either use a POP3 (post office protocol version 3) or an IMAP (instant message access protocol). Depending on your email provider you can configure Outlook to use either IMAP or POP3 but which should you choose?

(i) Begin by pressing ![start] ![E-mail Outlook Express].

(ii) This will launch the Outlook internet connection wizard. First enter your name and press next.

(iii) Next enter your email address e.g. s.grace@pretendacc.com

(iv) Then you will be in mail server configuration screen (fig 1). Choose "IMAP" type server from the dropdown box.

(v) Next enter the incoming mail servers address e.g. mail1@pretendacc.com. The server will be using either IMAP or POP3 make sure your provider allows this before pressing next by checking your mail providers server settings online

(vi) Now enter the outgoing mail servers address e.g. mail1@pretendacc.com . This will use SMTP to send email messages. Press next to continue
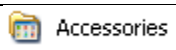
Fig 1:

In this screen you set up the email server configuration such as your incoming mail server type its address and the address of your outgoing mail server.

(vii) Next you must configure your email login details. Enter your email user name and password into the textboxes and press next to continue. If your provider requires you to login using secure password authentication (SPA) tick the box on screen. Press next to continue.

(viii) The installation wizard will then complete press finish to continue. You will now be able to synchronise and view your emails. Press inbox to open your account to view unread email messages.
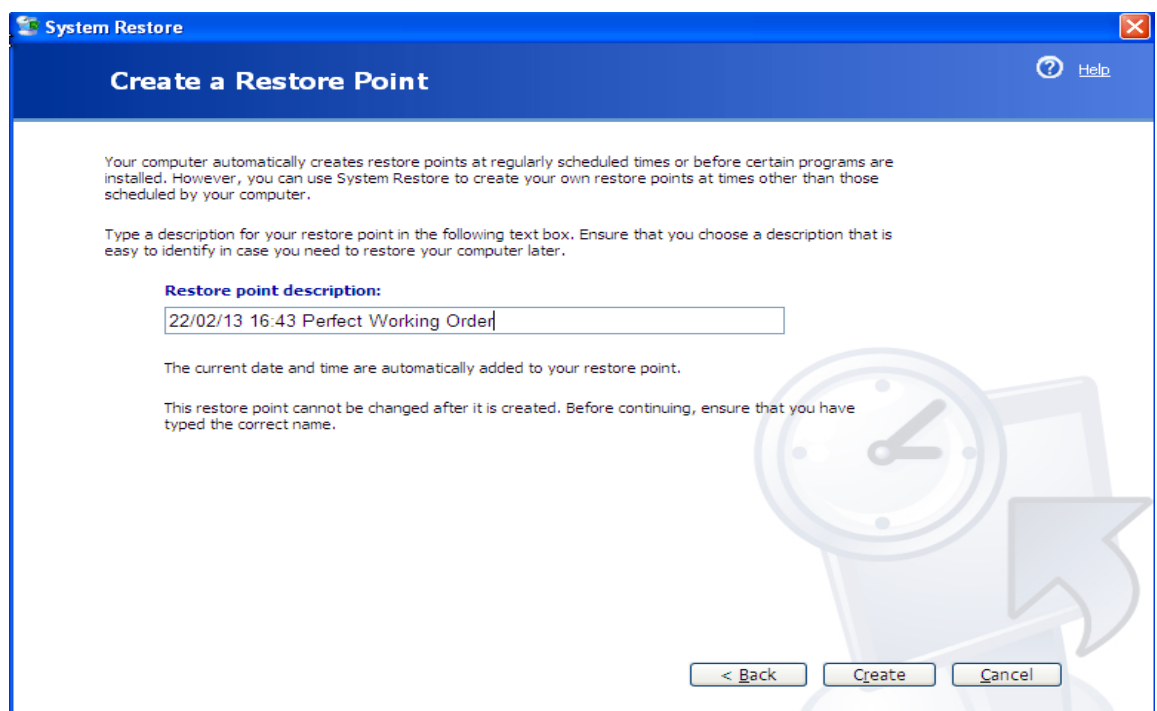
A.8.0: Creating a system restore Point

In this section we will set up a system restore point. System restore points are an incredibly useful functionality in Windows XP. System Restore points can restore your computer to the same state it was in when your computer was working functionality, they do this by saving the current state of your system files, drivers and settings and restoring them when used without affecting your personal files and folders in the "My Documents Folder" (Microsoft Corporation, 2013). This makes them highly more functional then other options such as a full system reinstall which will delete all your files and folders that you have not backed up externally. To learn more about system restore visit here http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/app_system_restore_hss_understand.mspx?mfr=true

(i) To create a system restore point press [start] – [All Programs] – [Accessories] – System Tools – System Restore. This will open the System restore window.

(ii) Here you will find more information about system restore functionality. Remember that they can be reversed if they do not perform correctly. To create a system restore point press the create restore point button on the right side of the screen and then press next.

(iii) Now you will have to enter a name for this restore point be descriptive use a format such as Date time and working order or changes made, it will be beneficial later e.g. 10/10/13 16.00 Perfect working order. Press create to create the system restore point. (Fig 1).

Fig 1:

This is the system restore configuration screen here you can enter descriptive name for your restore point and press create to create this restore point for the computers current configuration
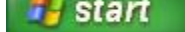

(iv) Your system restore point has now been created you will receive confirmation of its name, date and time. Press home to bring you back to the system restore window or press close to close system restore.

A.8.1: Performing a System Restore

In this section you will test the system restore point you have previously created in section A.8.0. To test system restore you will make modifications to the system files and settings then restore the computer to its original state and see if the changes have been undone. We will make 3 changes to the machine. Firstly change the name of the machine to "mc1", next create a new folder in the data partition called backup and finally disable the CD/DVD drive within the machine. After making the changes reverse them by using the system restore point and take note of what has occurred.

Changing the name of your machine

(i) To change the name of your computer press ![start] – ![Control Panel] – ![System] (Control Panel in Classic view).

(ii) In the system properties panel press "computer name" here you will see a textbox with the current computer name delete this and type "mc1" (fig 1). Press apply and then ok to confirm the change.

Figure 1:

This is the system properties panel computer name menu. To change you computers name delete the current text and type "mc1"
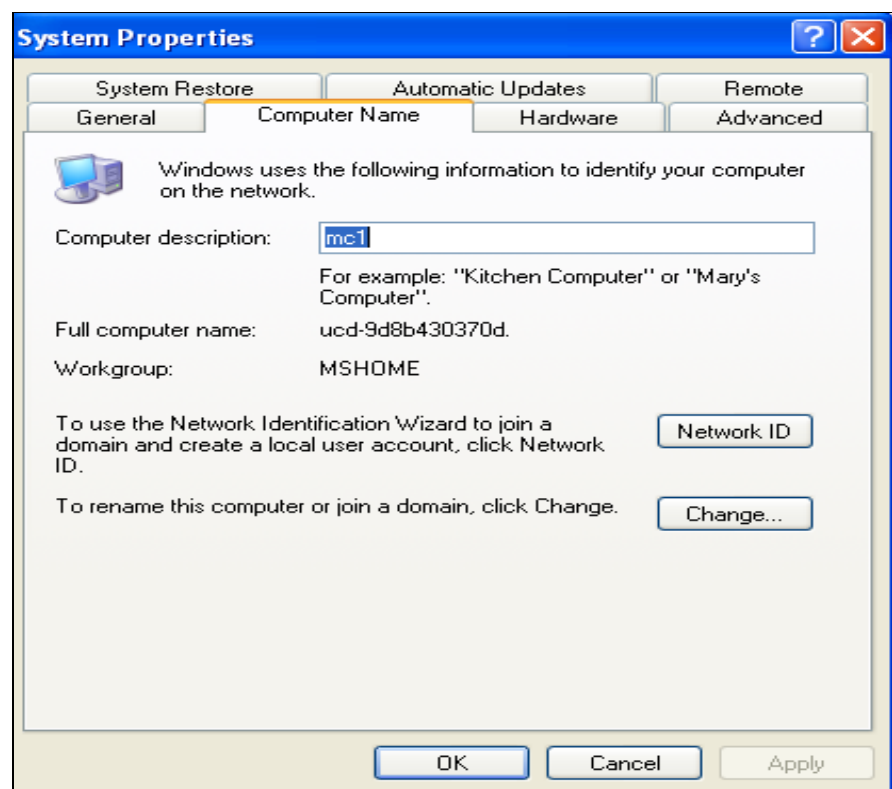
Create new folder in Data Partition

(i) To create a new folder in the Data Partition press ![start] – ![My Computer]. Click on your data drive not your system drive which contains your OS files.

(ii) Once in your partition right click the white space and press new then new folder. The folder will be created name it "backup".
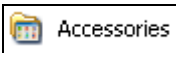
Disable the floppy drive within the machine

(i) Begin by pressing ![start] – ![Control Panel] – ![System] (Control Panel in Classic view).

(ii) In the system properties window press hardware then Device Manager. This will launch the device manager window (fig 2).

(iii) In the device manager click on DVD/CD drive this will open a dropdown list of drives for your machine. (fig 2)

(iv) Right click the drive and press disable this will disable the CD/DVD drive. (fig 2)

Fig 2:

This shows the device manger console here you can disable the CD/DVD drive by right clicking it and pressing disable
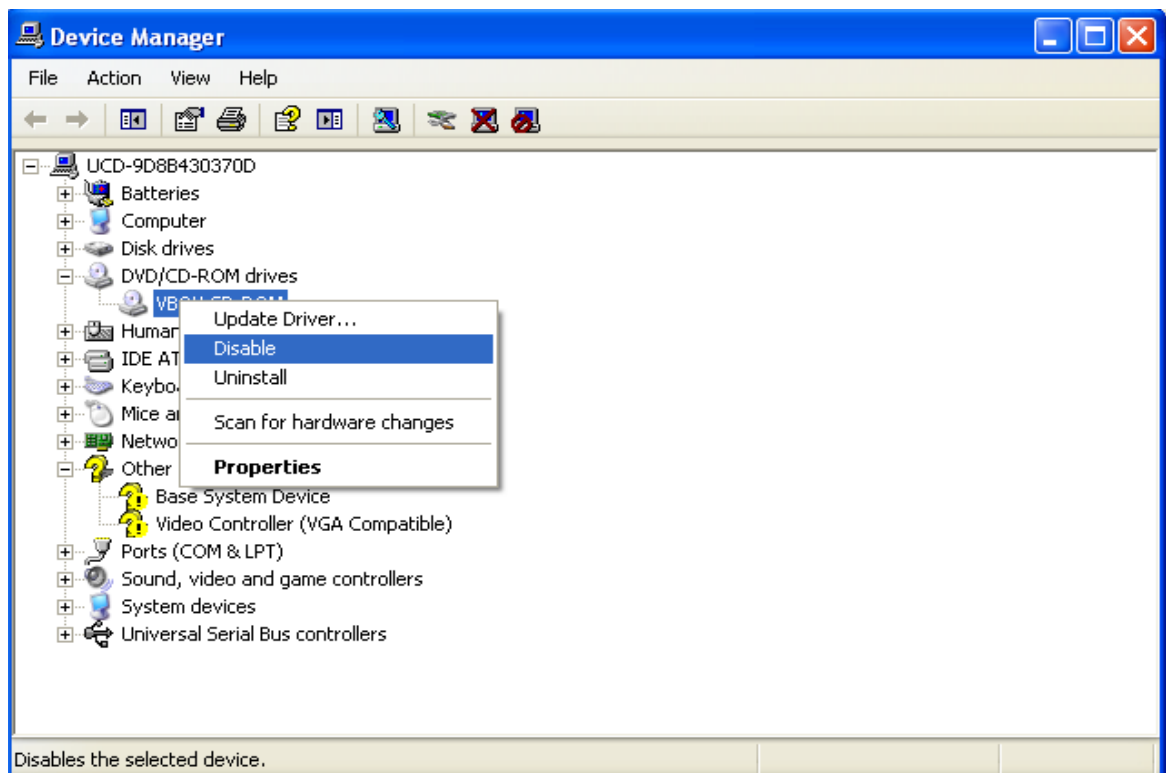
Restoring your machine using a system restore point

(i) To open the system restore window press ![start] – ![All Programs] – ![Accessories] – System Tools – System Restore.

(ii) Press the "restore my computer to an earlier time" button and press next.

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(iii) This will bring up a calendar (fig 3). Select the date you created the restore point earlier on the calendar this will load a list of restore points created on that date for you to choose from.

Fig 3:

This shows the system restore point calendar here you chose a date to see a list of system restore points created on that date
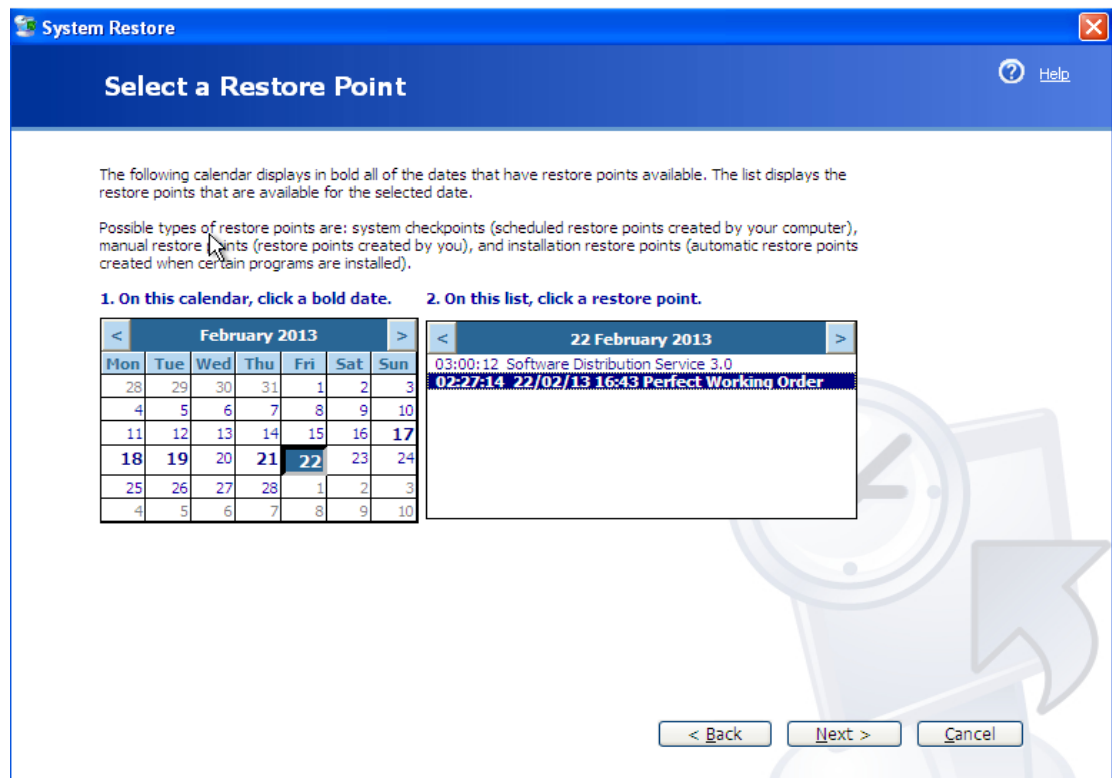
(iv) Click on the restore point you want to use and press next. You will be asked if you want to restore your machine. Before you restore close all folders and save all files then click next.

(v) Your machine will then restart and the system restore will load. When you log into the machine after the restart you will presented with a message that the system restoration has been completed. It will tell you the date and the Restore point used.

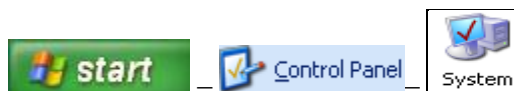(vi) If you want to undo this restoration, use another restoration point or create a new system restore point go back to the system restore window by pressing – – – System Tools – System Restore and follow on screen instructions

Effects of System Restore

(i) To check if your system restore has been successful in undoing changes we made to the computer first check if the name of the computer has been switched back. Press – – – Computer Name. You will notice it is no longer "mc1".

(ii) Next press Hardware in the System Properties window and then press the device manager button. This will open the "Device Manager" (fig 2) click on your CD/DVD drive you will notice the device is no longer disabled.

(iii) Finally press ![start] – ![My Computer] and then your data partition. You will notice that the folder backup is no longer there this is because system restore only protects files that are in the "My documents folder". The system restore has been successful.

A.9.0: Backing Up the System Registry

The system registry is used to store the settings and configuration of the Windows operating system. It is made of keys known as registry keys. These are HKEY_CLASSES_ROOT, HKEY_CURRENT_USER, HKEY_LOCAL_MACHINE, HKEY_USERS and HKEY_CURRENT_CONFIG. Each key stores the information for something different for example HKEY_CURRENT_USER points to the settings and configuration for the current user which is stored in the larger HKEY_USERS. HKEY_USERS stores settings like theme and programs that launch on login for each user account. It is beneficial to have a backup of registry keys should you change any or if keys which contain .reg files become corrupted. This section will show you how to back up the registry.

(i) To open the registry editor press ![start] – ![Search] – "All files and folders" and search for "regedit" when regedit.exe appears in the search results double click to launch the registry editor (fig 1).

Fig 1:

This is the registry editor here you can manipulate the registry keys.

You can also export them for backups and import them to restore.
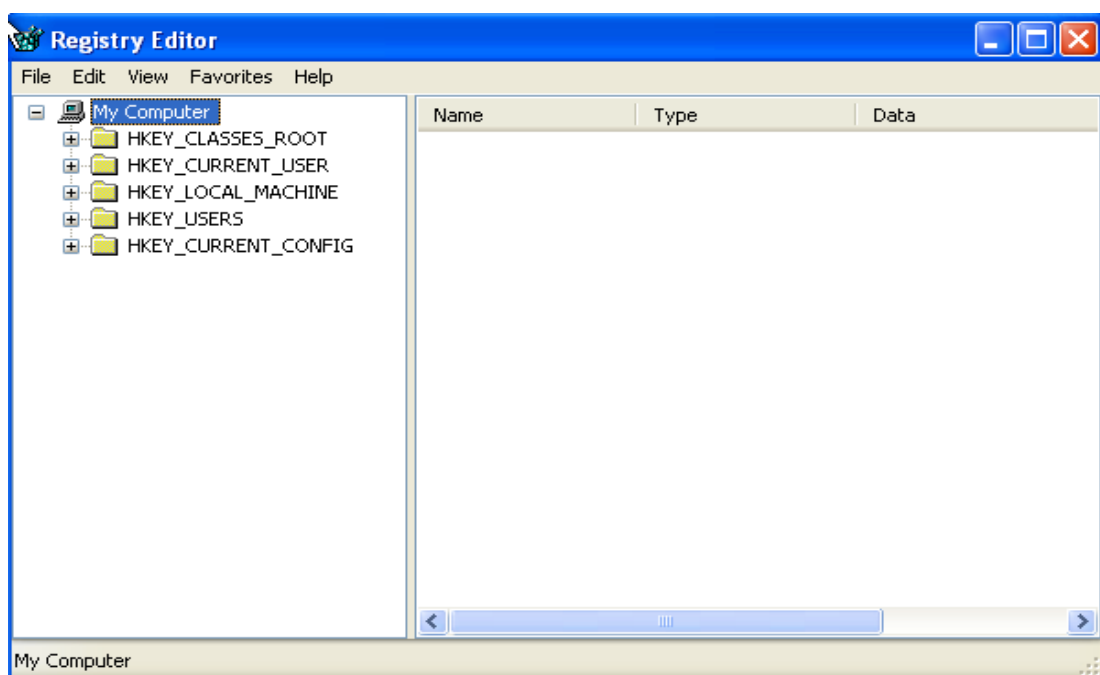
(ii) To back up the registry editor press file "export" this will open the windows explorer file folders click desktop and right click the white space. Press new and then new folder this will create a new folder. Name it "reg-export".

(iii) Open the folder you have created by clicking on it. Give the backup a name such as "reg-backup and press save the registry keys have now been backed up to a folder on your desktop.

(iv) Close the registry editor and check the folder you created called reg-export on your desktop there should be a single .reg file inside called reg-backup this is your registry backup. (fig 2)

Fig 2:

This shows the desktop of Windows XP with a folder called reg-export. (Background)
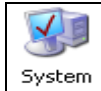
The contents of the folder can also be seen (foreground) and there is a single .reg file called reg-backup
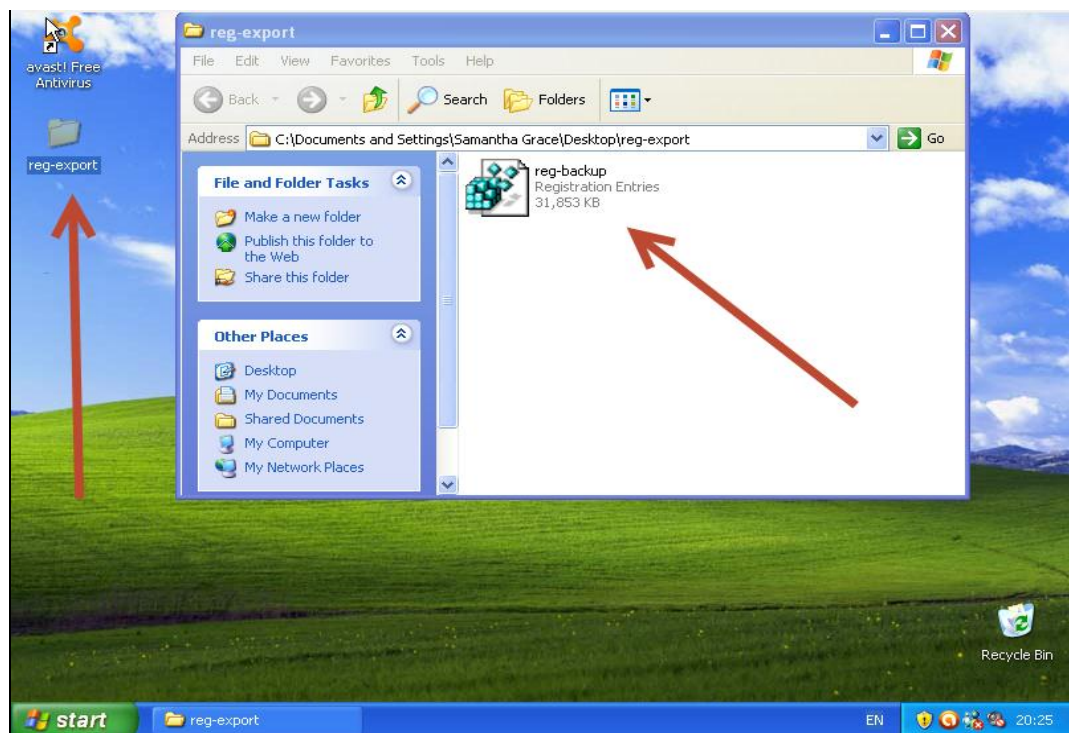
A.10.0: Ensuring Driver Compatibility

A device driver is a piece of software that allows your hardware to communicate with the OS. Usually device drivers are included in the windows software or can be sourced through the by updating the device driver in the device manger console. Drivers also come included on a disk or with the device e.g. a USB thumb drive will have its own drivers.

A signed driver is one that includes a digital signature this signature shows that the publishers of this driver (hardware/software Company) have been verified with a certification authority (Microsoft) to show that the driver poses no security risk. Windows checks these signatures when they are being installed. Unsigned drivers can pose a security threat or upset the stability of your system. Therefore it is beneficial especially when working in a business to turn off unsigned drivers. In this section you will be shown how to turn off unsigned drivers in Windows XP-Professional.

(i) Press   (Control panel in classic view) this will launch the system properties window.

(ii) Now press the hardware button. Next press the button called "driver signing" (fig 1)

Fig 1:

This is the System properties hardware menu here you can press Driver signing to adjust the driver signing permissions for your machine. Press apply to any changes in settings and ok to close.
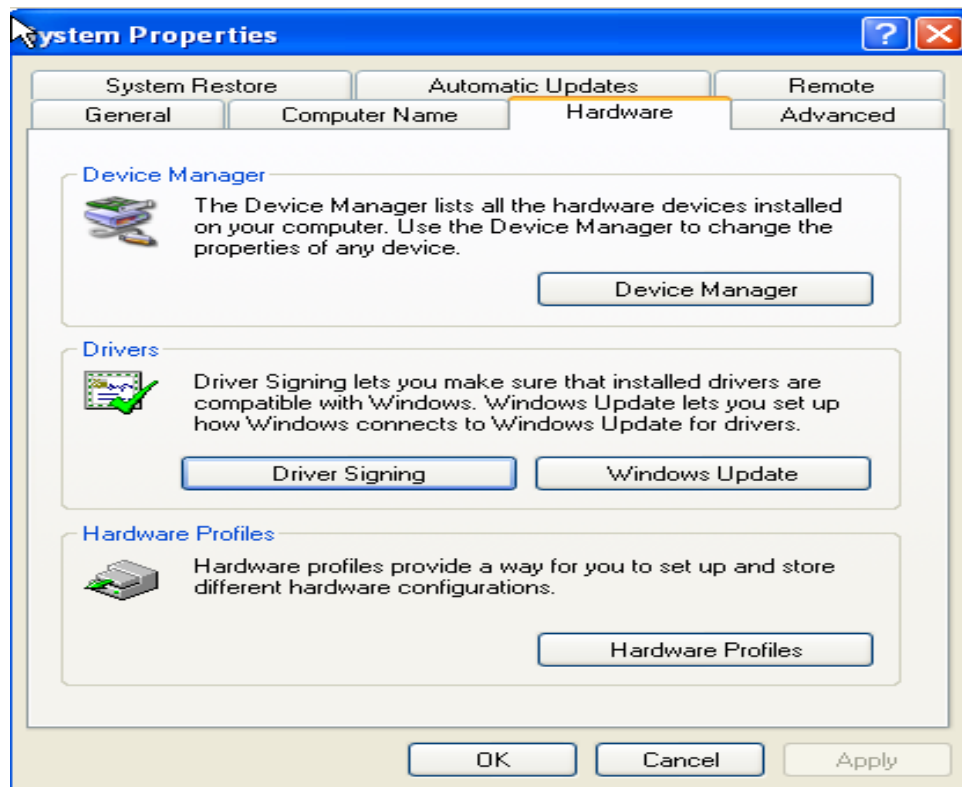
(iii) You will now be in the driver signing menu (fig 2). Here you can adjust the driver signing options for Windows XP. To not allow unsigned drivers press "Block - Never install unsigned drivers" button, then press ok. Unsigned driver installation has now been prevented.

Fig 2:

This is the driver signing options window. Here you can adjust the driver signing permissions for Windows XP press ok to apply changes
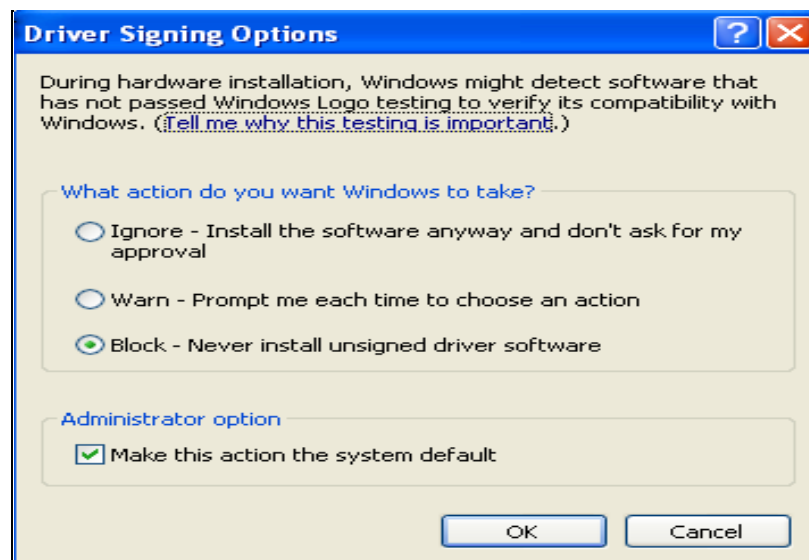
A.11.0: Installing Microsoft Web-Server

Microsoft's web-server is called internet information server (IIS). This server is actually a group of servers, including a hypertext transfer protocol (HTTP) server and a file transfer protocol (FTP) server. One of the main benefits is that it allows you to publish websites on your local network or intranet (an internal network for companies). The server can also be used to share company documents on a network. In this section you will install IIS (Rouse. M, 2008).

(i) To install IIS press **start** – **Control Panel** – **Add or Remov...** (control panel classic view)

(ii) This will open the "add or remove programs" window. Press add/remove Windows components. This will launch the installation wizard as seen in figure 1.

Fig 1:

This is the Windows Components installation wizard with IIS highlighted (foreground)

To open the "add or remove windows components" console press the button highlighted by the red circle.
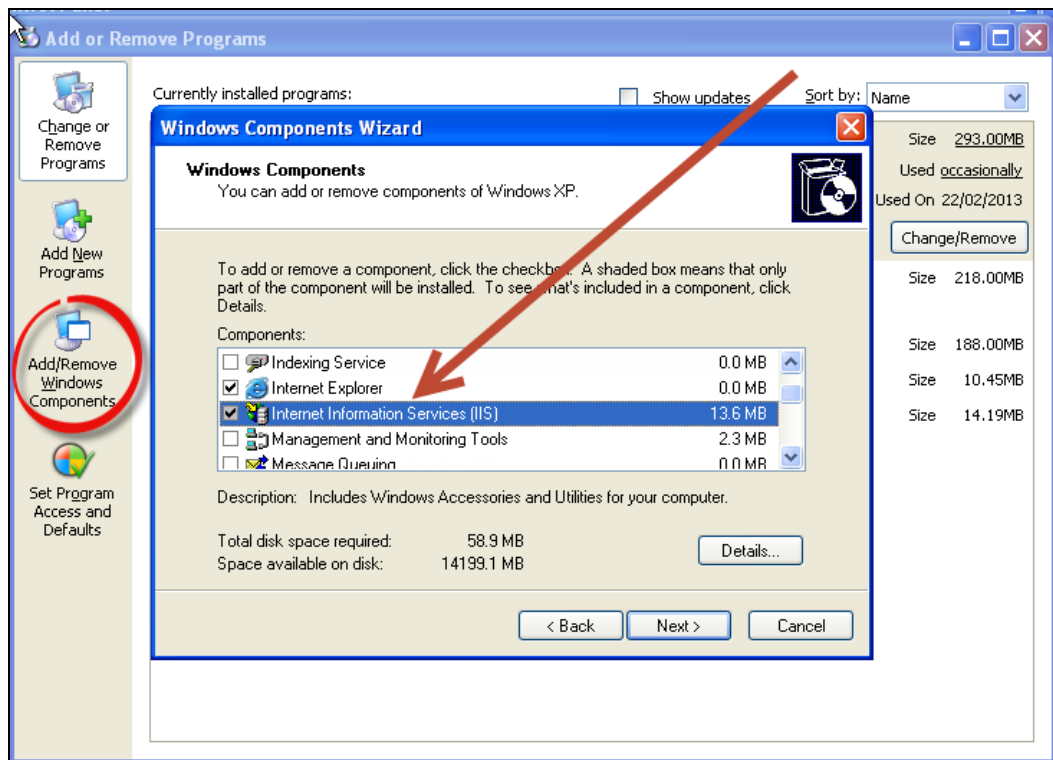
(iii) Tick the box next to internet information services (IIS) and press next. Installation will then begin this may take up to 5 minutes.

(iv) You will then be given a completion message press finish to close the installation wizard.

(v) To open the IIS management console press **start** – Search – All files and folders. Search for "inetmgr" click on the result that looks like this **inetmgr** to launch the IIS management console. (Fig 2).

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Fig 2:

This shows the IIS management console.
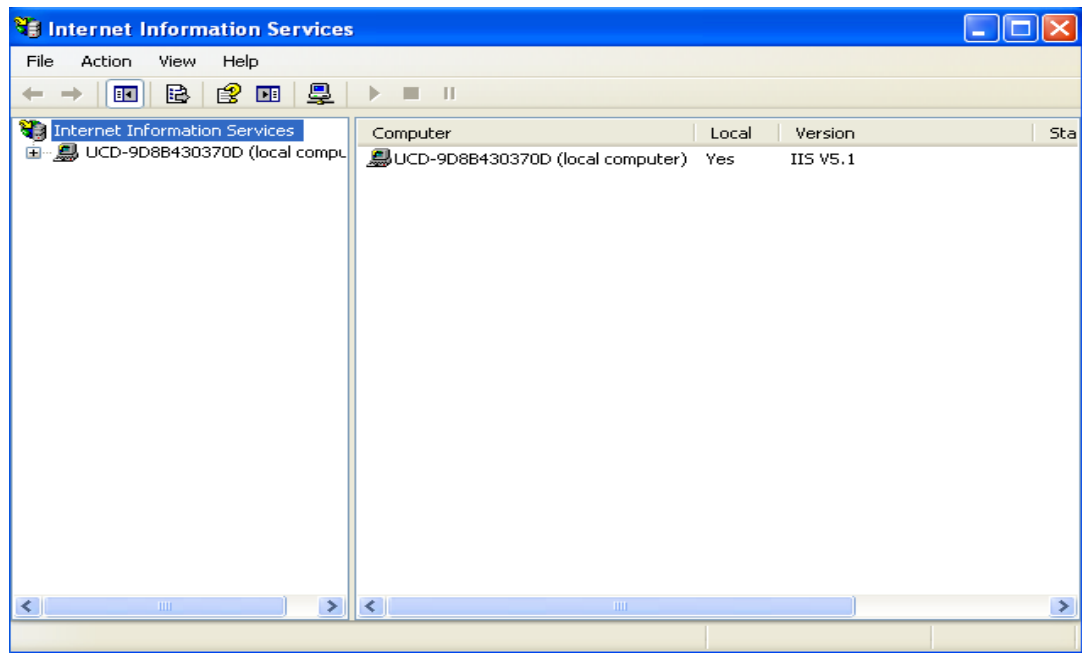
(vi) To view documentation on IIS type 127.0.0.1 into your browser. Enter your username and password into the pop up box. This will show a website IIS hosts containing documentation on itself (fig3).

Fig 3:

This shows the IIS hosted website which contains documentation about itself.

Debian-Linux 6 Squeeze (64-bit) Installation

This is a guide to help you install Debian-Linux 6.0 (64-bit) in the workplace follow each section through to completion for optimal results. The Debian Foundation was created in 1993 by Ian Murdock in the spirit of the open operating system of Linux. The Debian Project strives to offer open and cheap operating system software to the world. Debian 6 was released in 2011 and uses the GNU/Linux kernel to support its operating system it is available free online at the Debian website or in cd form through many vendors (Debian Foundation, 2013)

B.1.0: Minimum System Requirements

The minimum system requirements for Debian 6 (64bit) are displayed below. For additional Information on Minimum System requirements go to
http://www.debian.org/releases/stable/i386/ch02.html.en

Central Processing Unit (CPU)	A Pentium 4, 1GHz system is the minimum recommended for a desktop system.	
	With Desktop	**No Desktop**
Random Access Memory (RAM)	Minimal RAM: 64Mb	Minimal RAM: 128Mb
	Recommended RAM: 256Mb	Recommended RAM: 512Mb
Hard Disk Space	1 Gb	5Gb
Other System Requirements	Debian does not impose hardware requirements beyond the requirements of the Linux or kFreeBSD kernel and the GNU tool-sets.	

## B.1.1- Installing Debian

Beginning Installation

(I)   To boot from device follow section A.1.0,

(II)   Next chose your method of installation. For ease of use we will choose "Graphical Install" by pressing enter.

(III)   Next choose the appropriate language with the cursor in this case "English" and press continue

(IV)   Next chose your country this will be used to set the date/time-zone for your system. Select your country or region and press continue

(V)   Your next step will be to choose your keyboard layout. If you are unsure of your keyboard layout chose the country region where you purchased your keyboard/laptop. In this example we will use "British English". Select it with the cursor and press continue.

(VI)   Debian will then configure the networking hardware. This will take approximately 30seconds. You must configure the host name. The default name is "Debian" if you are creating a network this will be the word that identifies the computer on the network. Leave it at default or change it to your own and press continue to the next step.

(VII)   You must now configure the domain name leave it at the default name of "localdomain" and press continue.(figure 1)
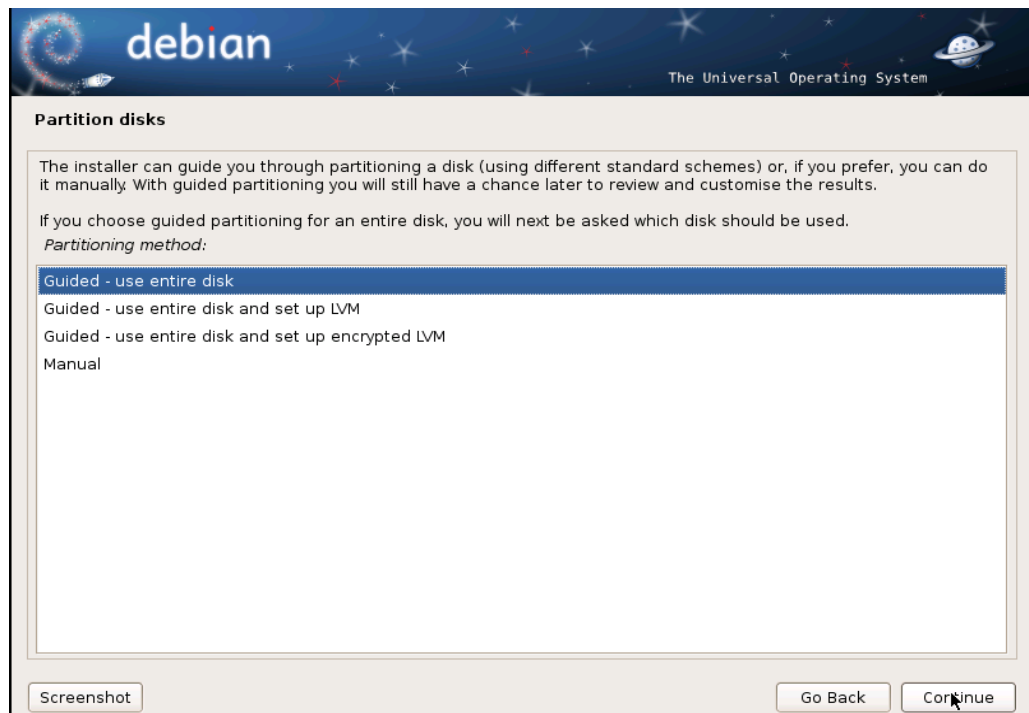
Figure 1:

This is the network configuration screen here you can enter the domain name your computer will have or the name of the local network.

The default name is localdomain
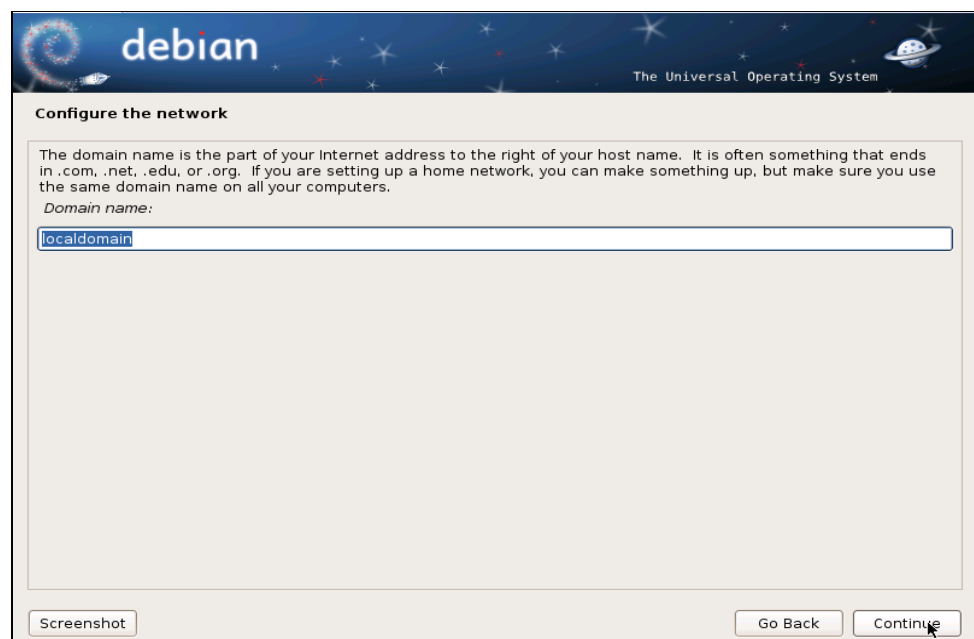
(VIII) Next we set the "root password" of the machine. This password is additional to any password a user may have for the computer and should remain known only by administrator, with this password any user can edit programs and settings within the system. Choose a password with a mixture of characters numbers and symbols for maximum security. Retype password to confirm and press continue to the next step.

(IX)   Now add your first user account this will be used for non-administrative user activities. For the purposes of this demonstration we will create the user Samantha Grace. Press continue to next step.

(X)   Next select the user name for this account. Type the first initial + Surname. Press continue to the next step.

(XI)   In this step choose a password for the new user account. Retype the password to confirm. Press continue to move to next step.

(XII)   The system will then load for approx. 20 seconds. When this has completed you will be presented with options to partition the Hard Drive Disks. For this demonstration we will chose "Guided- Use Entire disk" then press continue. (see figure 1)

Figure 1:

This shows the different types of partitions that a user can create on the hard drive of the machine.

Manual allows us to create our own partitions

(XIII) Choose the disk you want to partition with Debian and press continue.

(XIV)   Choose the types of partitions you want to create in your disk. In this example we will use the default "all files in one partition".

(XV)   You will then reach a screen with an overview of the partitioned disks. If these are not the partitions that you configured select "undo partitioned disks". If they are press continue to write these changes to the disk

(XVI)   The base system will now install this will take 1-3 minutes depending on the processing speed of your computer. After this has finished you will be asked if you want to scan other disks for the installation package manager. Click no (if you only have one installation disk otherwise select Yes) and press continue.

(XVII) You will then be asked if you want to use Network Mirrors for the installation Process (regional sites hosting Debian software for faster download speed). This is preferable as Network Mirrors supplement additional software that may not be part of you installation disk/file. They also contain the most up to date versions of software for Debian If you

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have a strong network connection their use is strongly recommended otherwise select no. In this guide we will select yes and press continue.

(XVIII) To bring up the right mirrors for you select your country from the list and press continue.

(XIX) Next select the mirror site with the best internet connection if you do not know leave it at the default site usually ftp<your country code>Debian.org. (see figure 2)
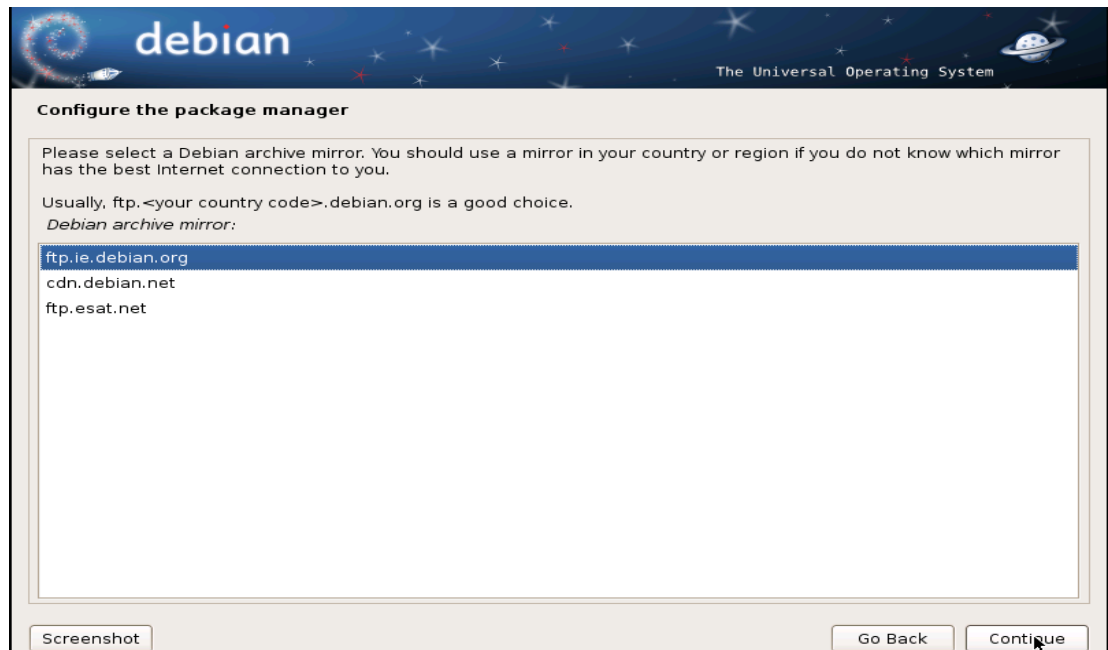
(XX) Now enter your http proxy information if you are using a proxy server if not leave it blank and press continue.

(XXI) The installation process will then commence. Whiles the operating system is installing you will be asked to allow anonymous statistics to be sent to the developers of Debian. Select either yes or no and press continue. You will also be asked what packages you would like to install with Debian. The Graphical user interface (GUI) is selected by default but you can untick this to use a textual user interface (TUI) only. Select any other software packages that you may need such as web server or SQL data base and press continue to continue the installation (Installation times may vary depending on your internet connection and how many packages you selected to install time is usually 15 -25 minutes. (figure 3)

Fig 3:

This shows a list of software packages that can be downloaded during the Debian installation such as a GUI and a SSH server
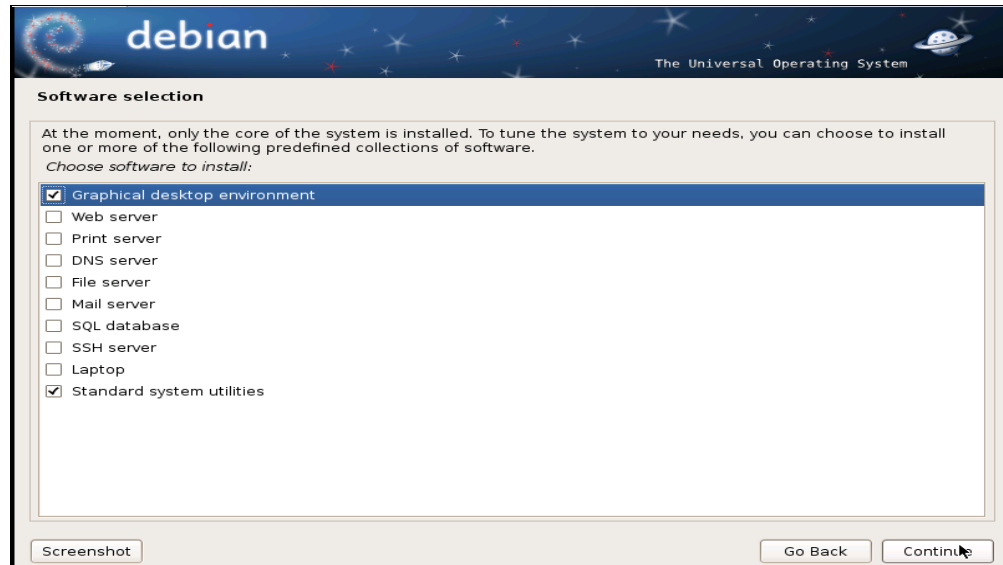
(XXII) Once the installation is complete you will be asked whether to allow Debian to alter the master boot record of your system this will allow Debian to boot immediately on power on. If Debian is not the only operating system on your computer and you do not want to alter the boot record select no. In this example however Debian is the only OS on the computer so select yes and press continue. The GRUB boot loader will then configure and the installation will complete.

(XXIII) After the installation completes you will be reminded to remove the installation device (Cd/Floppy) so that the new OS boots and not the installation process screen again. Press continue and the computer will restart with and Debian will launch.

B.1.2: Implementing a Static IP address

In this section you will be shown how to configure the Debian network so that it uses static IP address and not a dynamically assigned one (see section A.5.0 for more on static/dynamic IP addresses). Debian works in a slightly different manner than most operating systems you might be familiar with the majority of tasks with Debian can be performed almost exclusively in the root terminal.

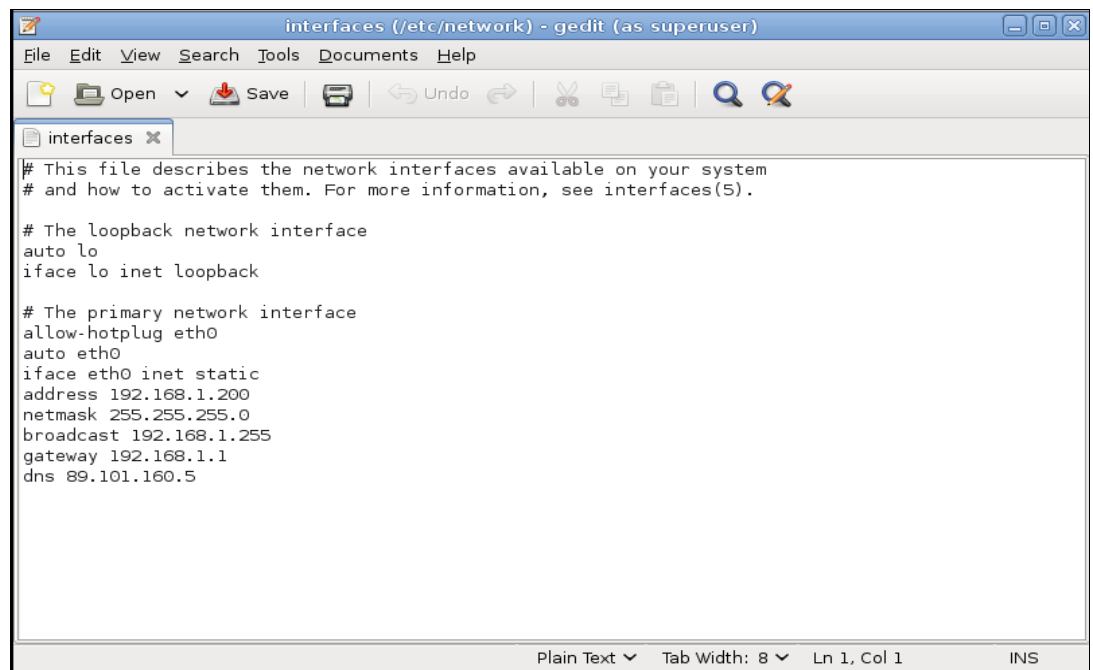(i) Begin by opening the root terminal press - -
.
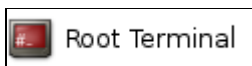
(ii) To make your network use a static IP address find the current network details by typing "**ipconfig /all**" into the command prompt window of your Windows XP machine or another Windows based machine or "**ifconfig**" into the Debian root terminal machine. For your two machines to connect they must be on the same local network read section A.5.0 for more information.

(iii) Now in the root terminal type "**gedit /etc/network/interfaces**" This will open the network interfaces file as seen in figure 1.

```
interfaces (/etc/network) - gedit (as superuser)
File  Edit  View  Search  Tools  Documents  Help

  Open  v   Save  |     Undo  |          |    |

 interfaces

# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
allow-hotplug eth0
auto eth0
iface eth0 inet static
address 192.168.1.200
netmask 255.255.255.0
broadcast 192.168.1.255
gateway 192.168.1.1
dns 89.101.160.5

                          Plain Text  v   Tab Width: 8  v   Ln 1, Col 1          INS
```

(iv) Edit your interfaces document (fig1) by deleting the line "iface eth0 dhcp" and instead insert the details as shown in fig 2 below. Adjust the address if required for your own local network.

Fig 2:

This is your static address setup. Your computers ip will be next to **address.** The network is next to **netmask**. The router address will be next to **gateway** etc.
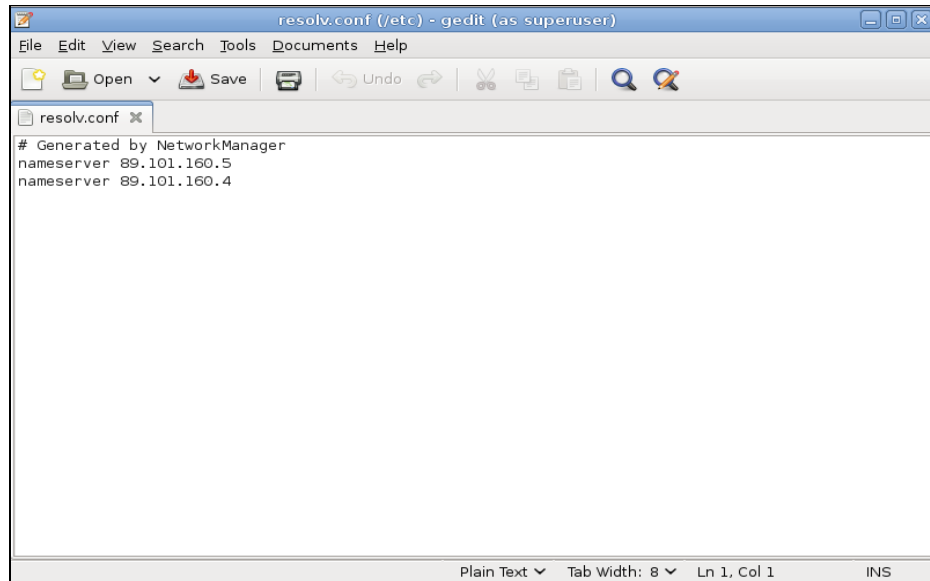
```
allow-hotplug eth0
auto eth0
iface eth0 inet static
address 192.168.1.200
netmask 255.255.255.0
broadcast 192.168.1.255
gateway 192.168.1.1
dns 89.101.160.5
```

(v) Now that you have inserted these details press save and close the editor.

(vi) Next edit your DNS server address by typing "**gedit /etc/reslov.conf**" into the root terminal. This will launch the DNS server configuration file (fig 3) here enter the IP address of two DNS name servers in the format shown in figure 3 (to find your current nameservers look at the results of step (iii) ifconfig or ipconfig /all command)

Fig 3:

This is the DNS server configuration file enter the two server IP address you were using previously or do a Google search for more DNS servers in your area e.g. Google 8.8.8.8 in Dublin.

DNS servers turn IP domain names e.g. google.ie into IP addresses 89.102.16.4 etc.


```
resolv.conf (/etc) - gedit (as superuser)
File  Edit  View  Search  Tools  Documents  Help
  Open      Save          Undo        Q  Q
resolv.conf ✖
# Generated by NetworkManager
nameserver 89.101.160.5
nameserver 89.101.160.4

                    Plain Text    Tab Width: 8    Ln 1, Col 1        INS
```

(vii) Next type "**/etc/init.d/networking restart**" to restart the network.

(viii) You should now have internet access but are the machines remotely connected? Test this by pinging IP address of another machine on the local network.
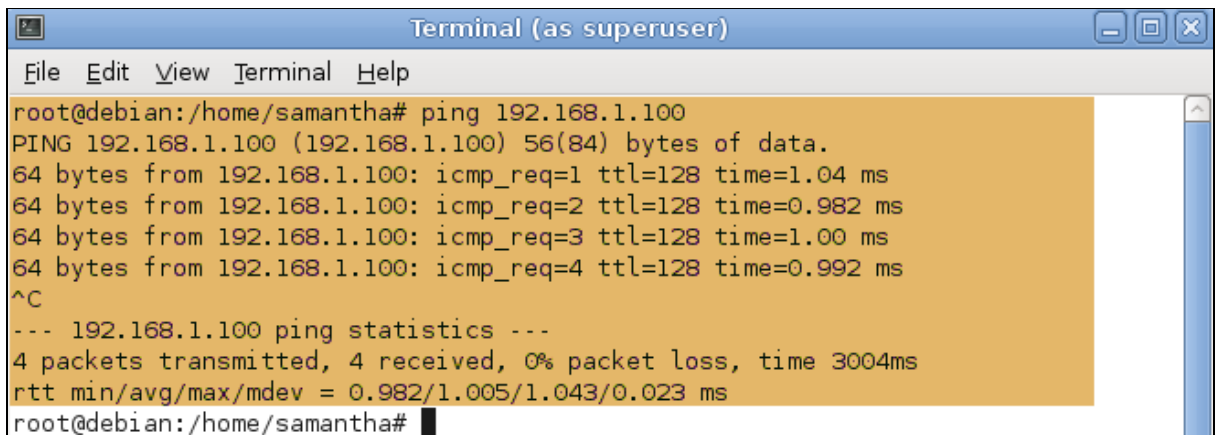
(ix) Open the root terminal type ping + address of other machine e.g. ping 192.168.1.100

(x) The machine will then send packets continuously to stop sending packets and see results press ctrl + c. If the connection is successful they are both on the same local network (fig 4).

(xi) Test this on your other machine also to be sure connection has been achieved (fig5)

Fig 4 & 5:

This shows a successful connection over a local network between two static IP addresses set up in this manual using ping


```
Terminal (as superuser)
File  Edit  View  Terminal  Help
root@debian:/home/samantha# ping 192.168.1.100
PING 192.168.1.100 (192.168.1.100) 56(84) bytes of data.
64 bytes from 192.168.1.100: icmp_req=1 ttl=128 time=1.04 ms
64 bytes from 192.168.1.100: icmp_req=2 ttl=128 time=0.982 ms
64 bytes from 192.168.1.100: icmp_req=3 ttl=128 time=1.00 ms
64 bytes from 192.168.1.100: icmp_req=4 ttl=128 time=0.992 ms
^C
--- 192.168.1.100 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 0.982/1.005/1.043/0.023 ms
root@debian:/home/samantha#
```



```
C:\Documents and Settings\Samantha Grace>ping 192.168.1.200

Pinging 192.168.1.200 with 32 bytes of data:

Reply from 192.168.1.200: bytes=32 time=1ms TTL=64
Reply from 192.168.1.200: bytes=32 time<1ms TTL=64
Reply from 192.168.1.200: bytes=32 time=1ms TTL=64
Reply from 192.168.1.200: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.200:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

B.2.0: Create/Edit User Accounts

User Accounts are can be created to allow many different employees to log into the same machine using Debian. This section will demonstrate how to create user accounts on your newly installed Debian-Linux operating system. You should note Debian has a superuser account which can be accessed from any account through the terminal window. The root user has full control over every aspect of the operating system therefore it is vitally important to keep the root password secret from normal users.

(i) Open up the Users & Groups panel on the desktop. This can be found by clicking System -

Administration > - Users and Groups. This will launch the user settings window.

(ii) In this window on the left hand side you will notice the name of your first user (which you created during installation) is already there. Now to add your next user press add on the bottom left. This will launch the "create new user" screen (figure 1). On this screen enter the full name of the next user you wish to create. Notice that the shorter "username" is created by default. You can change this if you require (to a format such as first-initial. Surname). Click Ok to continue.

Figure 1:

This shows the create new user window (foreground) and the user settings window (background)

Fill in the textboxes to create a new user.
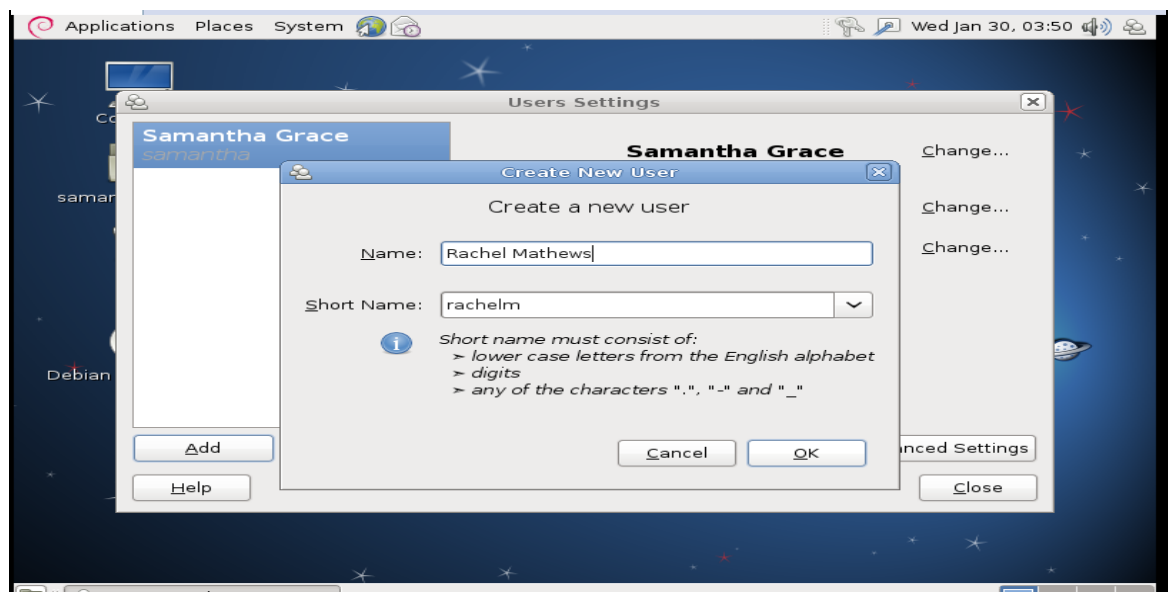
(iii) You will be asked to enter a password for the user you are creating and retype to confirm. Press Ok and the user is created.

(iv) The new users name will appear on the left side list in the user settings window. Repeat these steps to create the required number of user accounts.

(v) To edit a user account double click on the user account you wish to edit and alter the appropriate details.

(vi) To delete a user account highlight the account you wish to delete and press delete.

B.2.1: Create/Edit User Groups

User Groups can also be created and controlled in Debian 6. These allow us to give different access privileges to groups of users quickly without each account having to be configured. In this section you will be shown how to create groups.

Creating a User group

(i) Open up the Users & Groups panel on the desktop. This can be found by clicking System –

Administration   > – Users and Groups .
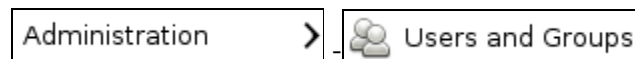
(ii) Next press the manage groups button on the bottom of the Users & Groups panel. This will bring you to the Groups settings panel (Figure 2). On the left side you will notice a list of groups created by default. We would like to add a group so press add on the top right. You may be asked for the root password of your machine enter this and press ok.

Figure 2:

This shows the groups settings panel (foreground) here we can add delete or edit groups and there settings respectively
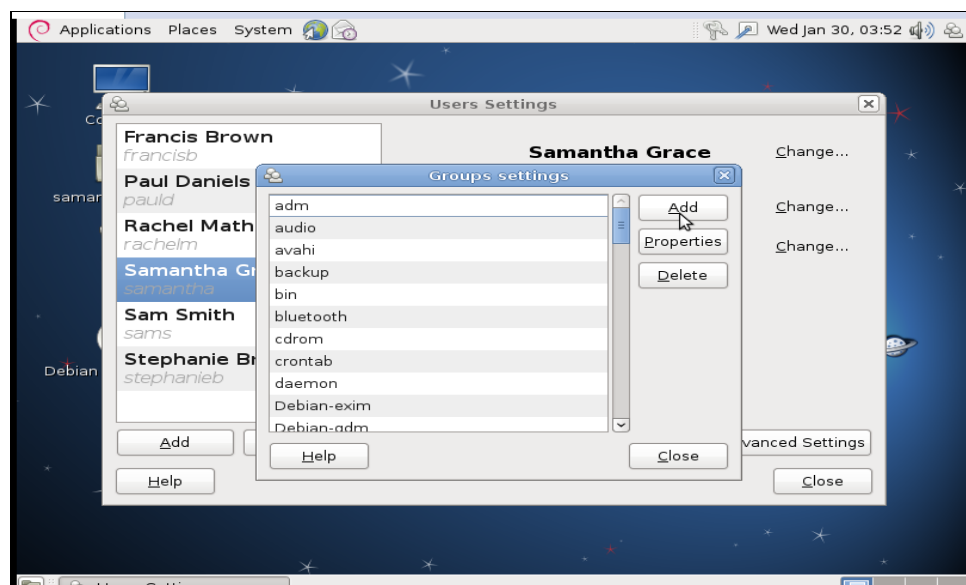
(iii) You will now be asked to enter a new group. The group ID is created by default leave this alone to avoid conflicting ID's. On the bottom of this screen you can now add as many users as you wish to this group. If you need to add another later this is no problem for now just select all the users you need to put in the group and press continue.

(iv) The group has now been created scroll down the list (alphabetical) to your group to confirm it is there.

(v) To add more than one group repeat the steps above.

Placing additional users in groups

(i) If you want to add another user account to a group later follow these steps later. Open the mange group settings again and scroll down to the group you wish to add users to.

(ii) Double click it and the same window as when you created the group will appear add users in the same manner as previous by selecting them and pressing ok.

Deleting Groups

(i) To Delete a group select group you wish to delete in the manage group settings window and press Delete.

(ii) You will be asked for the root password and press ok you will now notice the group has been deleted

B.2.2: File/Folder Security

In this section you will learn the basics implementing folder security in Debian. Just as in Windows XP-Professional section A.3.2 and A.3.3 Debian folders can be secured and shared over a network. Many of the functions that are performed through the GUI in Debian are done through the root terminal in Debian. Read more about directory permission commands for the root terminal visit http://wiki.debian.org/Permissions

Creating folders and viewing permissions/ownership
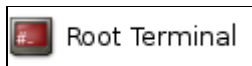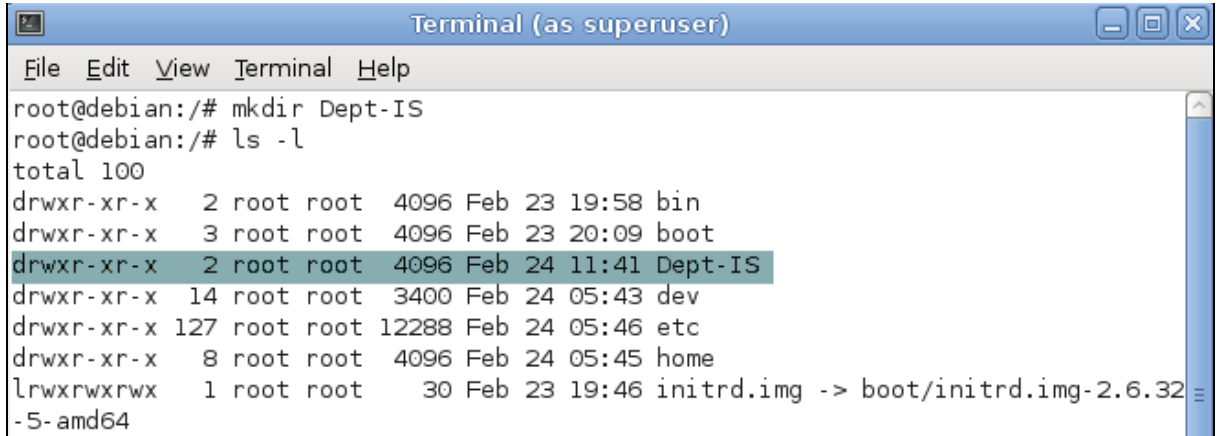
(i) Begin by opening the root terminal press [Applications] -[Accessories]- [Root Terminal]. You may be asked for the root password this will verify you are the superuser.

(ii) Each user account in Debian has their own folder when you enter the root terminal you will be in your folder i.e. root@debian://home/fbrennan. To change directory us the cd command to change to the root by typing "**cd /**".

(iii) To list current folders/files in the root directory type "**dir**" this will list all current directories.

(iv) To create a folder type "**mkdir Dept-IS**" this will create a folder called Dept-IS. (fig 1)

(v) To list file/folder permissions of a directory type "**ls –l**" this will list all folders in the root directory and their current permissions, owners and groups (fig 1).

Fig 1:

This is the list of files/folders permissions, owners and groups

```
root@debian:/# mkdir Dept-IS
root@debian:/# ls -l
total 100
drwxr-xr-x    2 root root   4096 Feb 23 19:58 bin
drwxr-xr-x    3 root root   4096 Feb 23 20:09 boot
drwxr-xr-x    2 root root   4096 Feb 24 11:41 Dept-IS
drwxr-xr-x   14 root root   3400 Feb 24 05:43 dev
drwxr-xr-x  127 root root  12288 Feb 24 05:46 etc
drwxr-xr-x    8 root root   4096 Feb 24 05:45 home
lrwxrwxrwx    1 root root     30 Feb 23 19:46 initrd.img -> boot/initrd.img-2.6.32
-5-amd64
```

(vi) To change the ownership of a file or folder use the "**chown**" command e.g. for Dept-IS in fig 1 change owner to "S.grace" and group to "IS" by typing "**chown s.grace:is Dept-IS**".

(vii) Next change the permissions allowed to the owner, the group and everyone else by typing "chmod 0770 s.grace" this allows the owner user account s.grace and those in the group "is" full access rights.

(viii) Now enter the Dept-IS folder and create a sub folder for S.grace that only she can access by typing "**cd Dept-IS**" then "**mkdir sgrace**"(fig 2)

(ix) Each user account in Debian creates a user group (of the same name) by default so the user s.grace will also have a group s.grace. Change the ownership of the group to only allow s.grace access by typing "**chown s.grace:s.grace sgrace**". (fig2)

(x) Next change the permissions to allow only the user and group access by typing "**chmod 0770 s.grace**". (fig 2).

(xi) Use the same methodology to allow/deny access for all group and user folders you create.

Fig2: This shows a folder called s.grace having its owner group and permissions being modified	``` root@debian:/# cd Dept-IS root@debian:/Dept-IS# mkdir s.grace root@debian:/Dept-IS# chown s.grace : s.grace s.grace root@debian:/Dept-IS# chmod 0770 s.grace root@debian:/Dept-IS# ls -l total 4 drwxrwx--- 2 s.grace s.grace 4096 Feb 24 11:47 s.grace root@debian:/Dept-IS# ```

B.2.2: File/Folder Sharing

In this section you will learn how to share folders on a local network by using samba server. Read section A.3.3 for sharing folders in Windows XP-Professional.
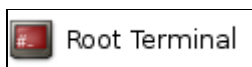
(i) Begin by opening the root terminal press - - . You may be asked for the root password

(ii) Next download samba server by typing "**apt-get install samba**" and pressing enter. Press Y to confirm download.

(iii) Now that Samba is downloaded open the configuration file by typing "**gedit /etc/samba/smb.conf**".

(iv) Scroll to the bottom and enter the details of the folder you want to share by mimicking the format of figure 1.

```
[Dept-IS]
path = /Dept-IS
validusers = S.Grace, R.Mathews
adminusers = S.Grace,
case sensitive = no
```

(v) Next create users accounts that can use samba by typing "**smbpasswd –a username**"

e.g. smbpasswd –a S.Grace.

(vi) You will then need to enter the password and confirm it. Make this the same password as your account.

(vii) Restart Samba to carry out changes by typing "/etc/init.d/samba restart"

(viii) To see if your folder has been shared on the local network, power on your Windows XP-Professional machine

(ix) Press Start – My Network Places. This will show list of shared files and folders on the network. Notice that your Debian folder is now being shared (fig 2).
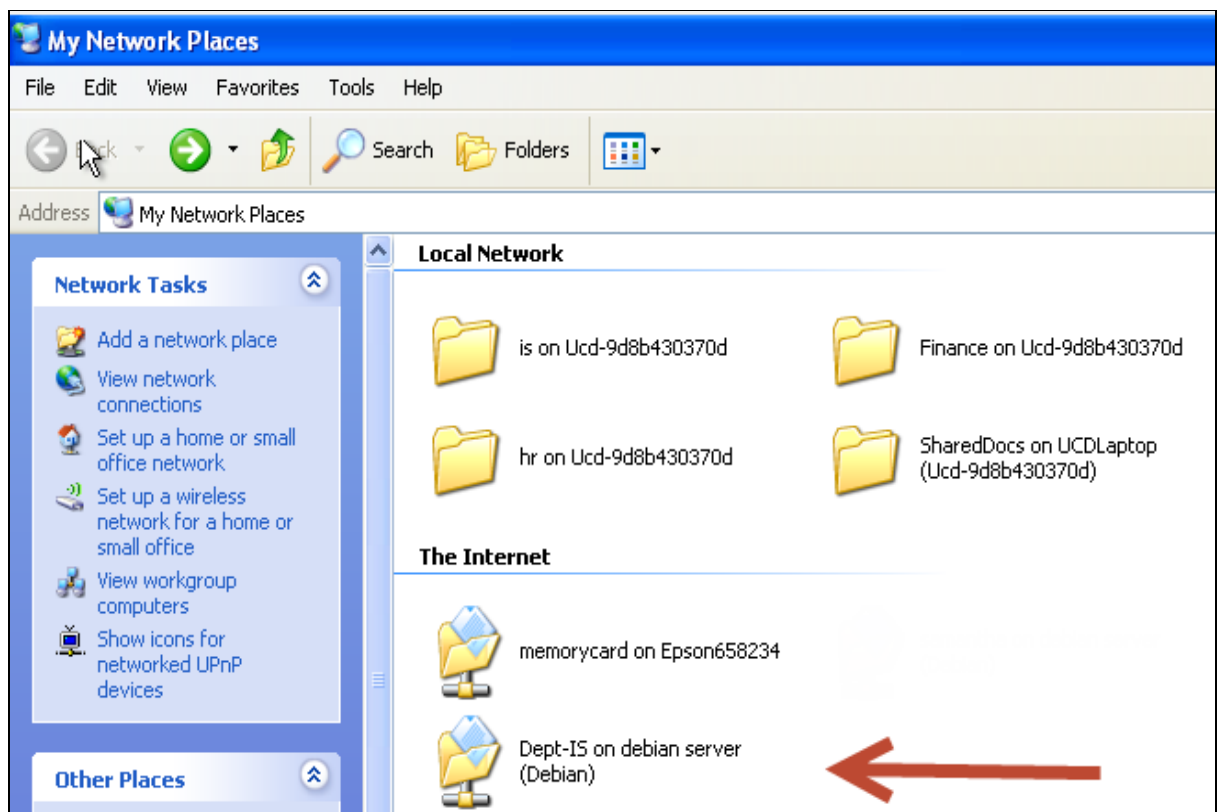
(x) To access your shared folder double click it and enter your username and password into the pop up box. You will now have access to files and folders with the same permissions applying to your account as on the Debian machine

B.3.1: Installation of Email Client
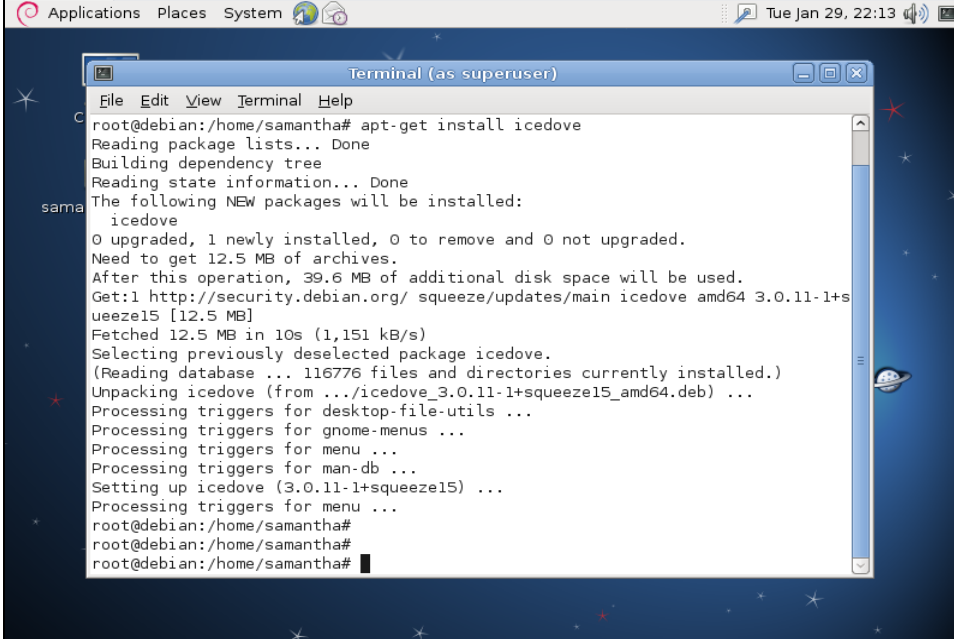
In this section we will demonstrate how to install an email client for your Debian 6 operating system. To find more information about email clients read section A.7.0. In this example we will install the email client "Icedove".

Installing Email Client "Icedove"

(i) To open the root terminal press [Applications] - [Accessories] - [Root Terminal] .

(ii) You must then enter the root password into a textbox. The terminal window will then launch and you will be logged in as root user.

(iii) In the root terminal type "**apt-get install icedove**". This will install the Icedove email client to the operating system. Remember you need an internet connection for this process. (fig 1)

(iv) You will then be told the amount of memory that will be used press Y to continue

Fig 1:

This shows the root terminal. Type "apt-get install icedove" to install icedove from the Debian repositories

(v) To open the Icedove email client click [Applications] - [Internet] - [Icedove Mail/News] . This will launch the Icedove setup as seen in figure 2.

Figure 2:

Follow on screen instructions to setup the Icedove mail client
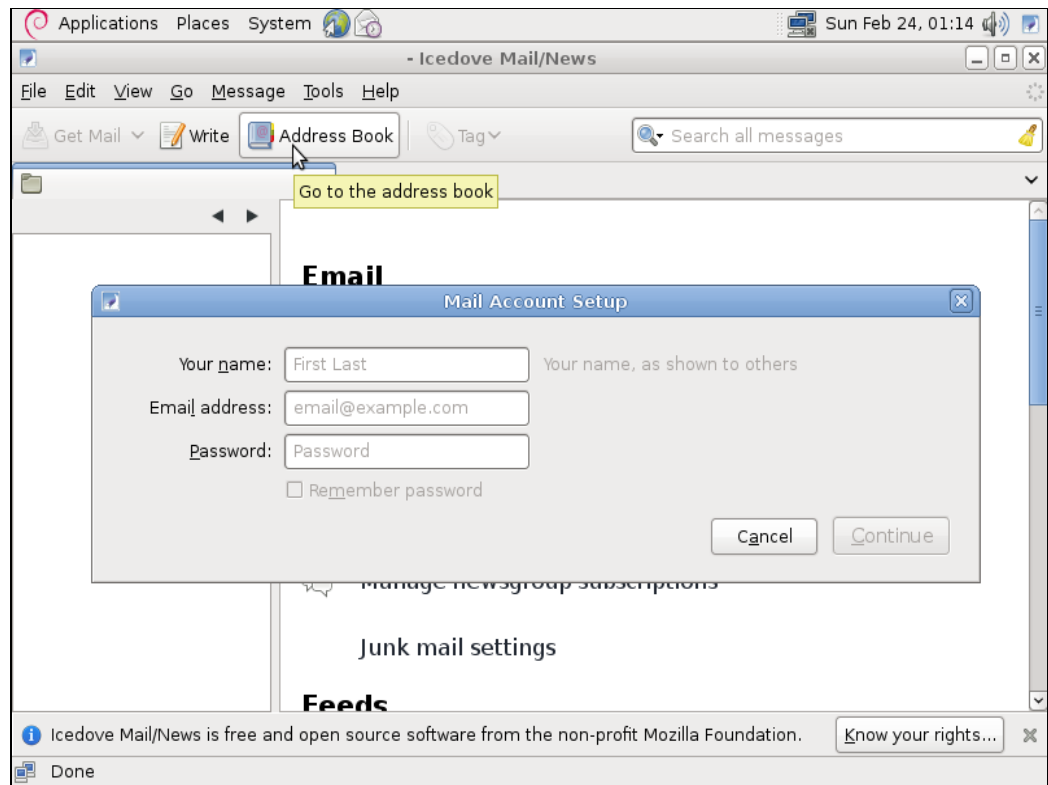
B.3.2: Installation of Anti-Virus Software

In this section you will be shown how to install Anti-Virus software in Debian. Linux systems in general are quite resilient against viruses but preventative measures however are wise in case your system is attacked. To learn more about Anti-Virus software read the start of section A.2.1
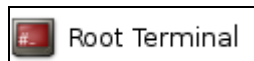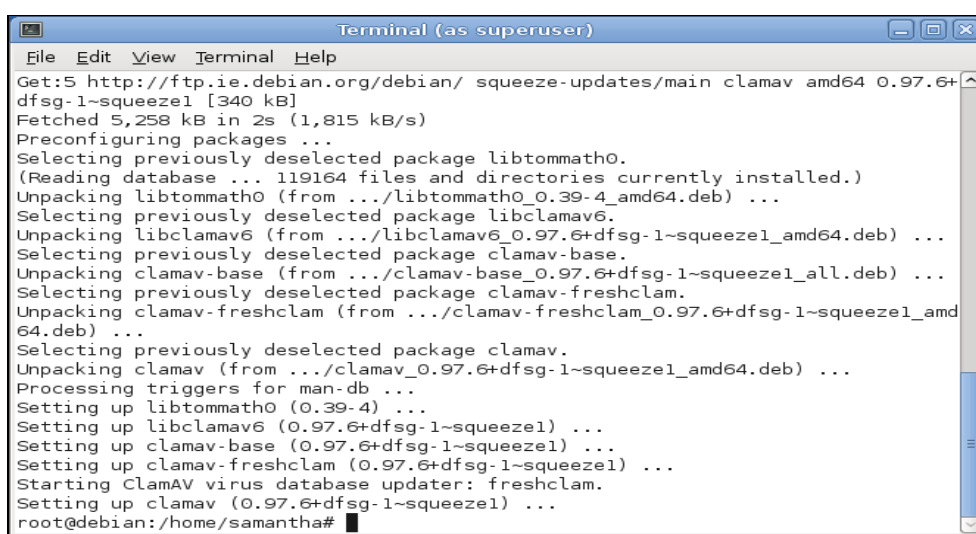
(i) Begin by opening the root terminal press [Applications] – [Accessories] – [Root Terminal]. You may be required to login enter your root password now.
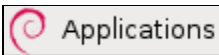
(ii) Once in the root terminal type "**apt-get install clamav**". Clamav will then install (fig 1)

(iii) You will then be told the amount of memory that will be used press Y to continue.

Figure 1:

This shows clamav being installed in the root terminal as it is included in the Debian distributed repositories that can be downloaded from using "apt-get install"

(iv) Next install the Clam Anti-Virus graphical user interface (GUI) do this by typing "**apt-get install calmtk**" into root terminal.

(v) You will then be told the amount of memory that will be used press Y to continue

(vi) To open the Clam Anti-Virus user interface go to [Applications] - [Accessories] - [Virus Scanner] as seen in figure 2. You can now perform an Anti-Virus scan to protect your computer.
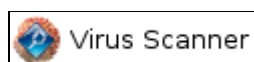
Fig 2:

This shows the Clam AV GUI where you can perform a scan to protect your computer

B.3.3: Installation of Firewall

Just like other operating systems the open ports can be easy entrances for hackers. Iptables is the Linux kernel firewall and is already installed in Debian however we need to install a firewall configuration tool to make Iptables easier to use for Debian novices. In this section we will install the guarddog firewall configuration tool. To learn more about firewalls read section A.2.2.

(i) First open the root terminal by pressing [Applications] - [Accessories] - [Root Terminal].
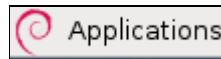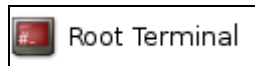
(ii) You may be asked for the root password. Enter it in the pop up screen.

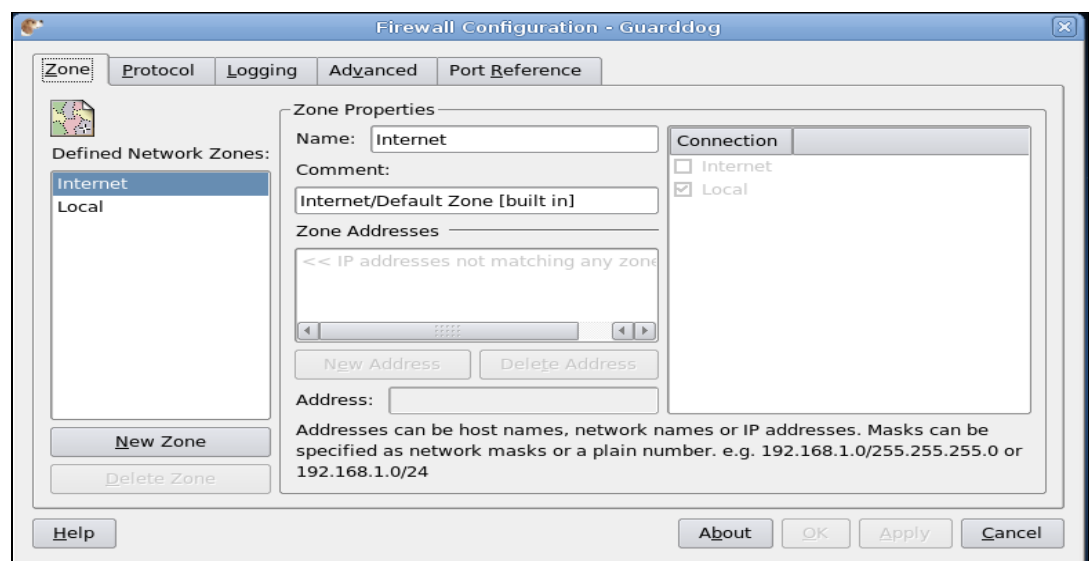(iii) Type "**apt-get install guarddog**". Press enter to begin installation.

(iv) You will then be told the amount of memory that will be used press Y to continue.

(v) Once guarddog has installed you can launch it from the root terminal by typing "guarddog" or by going to [Applications] - [Internet] - [Guarddog] this will open the guarddog configuration console as seen in figure 1.
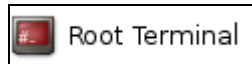
Fig 1:

This is the guarddog firewall configuration console. You must be logged in as a superuser to change guarddog settings.

B.3.4: Installing a graphical editing program

One of the many benefits of using an open source operating system such as Debian is the many free software packages available. Many users of computers in home or enterprise settings use graphics editing programs. In this section you will install the 3D graphics program "Blender".
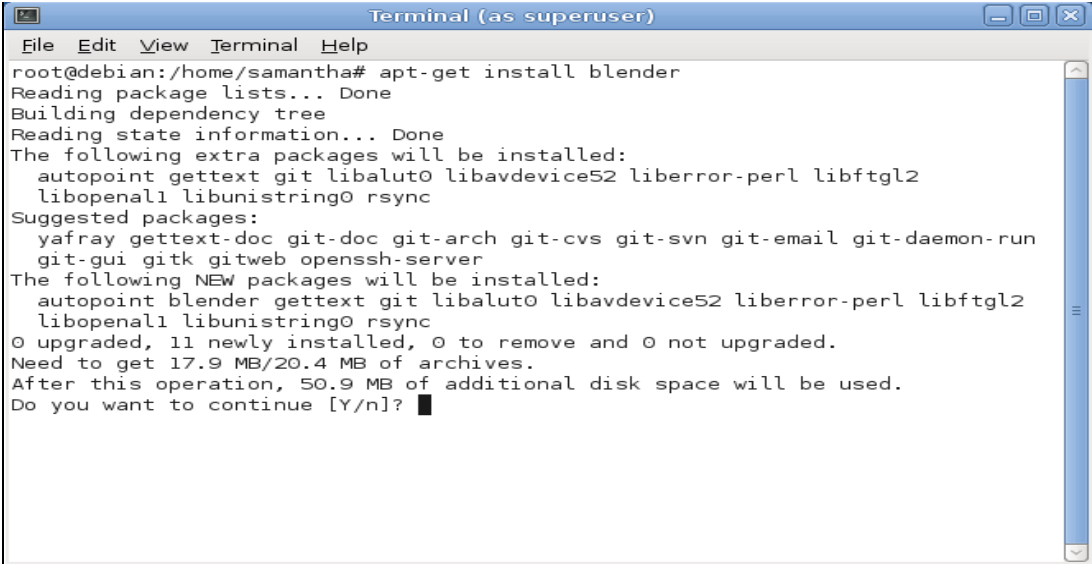
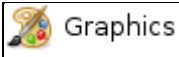(i) First open the root terminal by pressing ![Applications] - ![Accessories] -
![Root Terminal]. You may be asked for your root password.

(ii) Next type "**apt-get install blender**" this will begin the installation process as seen in figure 1.

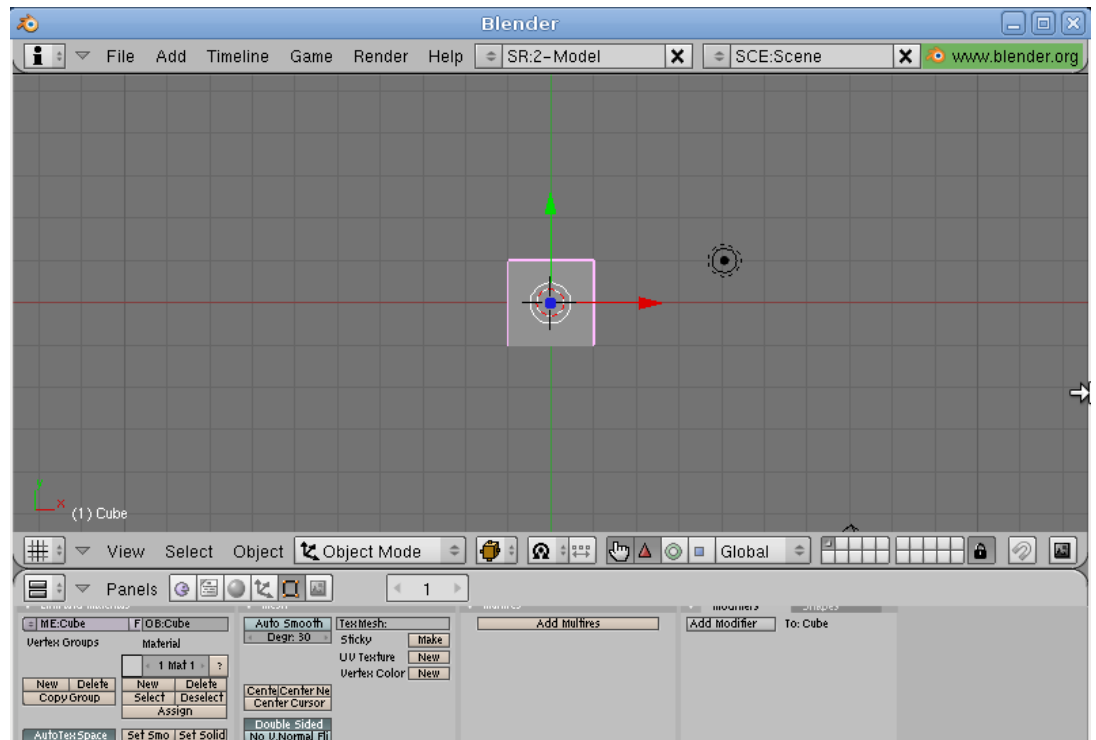(iii) You will then be told the amount of memory that will be used press Y to continue (fig 1)

```
Terminal (as superuser)
File  Edit  View  Terminal  Help
root@debian:/home/samantha# apt-get install blender
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  autopoint gettext git libalut0 libavdevice52 liberror-perl libftgl2
  libopenal1 libunistring0 rsync
Suggested packages:
  yafray gettext-doc git-doc git-arch git-cvs git-svn git-email git-daemon-run
  git-gui gitk gitweb openssh-server
The following NEW packages will be installed:
  autopoint blender gettext git libalut0 libavdevice52 liberror-perl libftgl2
  libopenal1 libunistring0 rsync
0 upgraded, 11 newly installed, 0 to remove and 0 not upgraded.
Need to get 17.9 MB/20.4 MB of archives.
After this operation, 50.9 MB of additional disk space will be used.
Do you want to continue [Y/n]? 
```

(iv) Once Blender has been installed go to ![Applications] - ![Graphics] -
![Blender (windowed)]
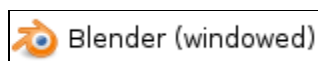
(v) This will open Blender (fig 2) to learn more about how to use Blender visit
http://www.blender.org/education-help/

Fig 2:

This shows the opening screen of the 3D image editor "Blender"

B.5.0: Installation of Apache Web Server

In this section you will install Apache web-server into Debian. Apache is Windows IIS (see section A.11.0, C.1.0) open source competitor. It widely used on web-servers apache works with a wide variety of scripting languages such as PHP and Perl. Apache2 is modularised i.e. components can be added later for a full list of components type "**apt-cache search apache | less**".
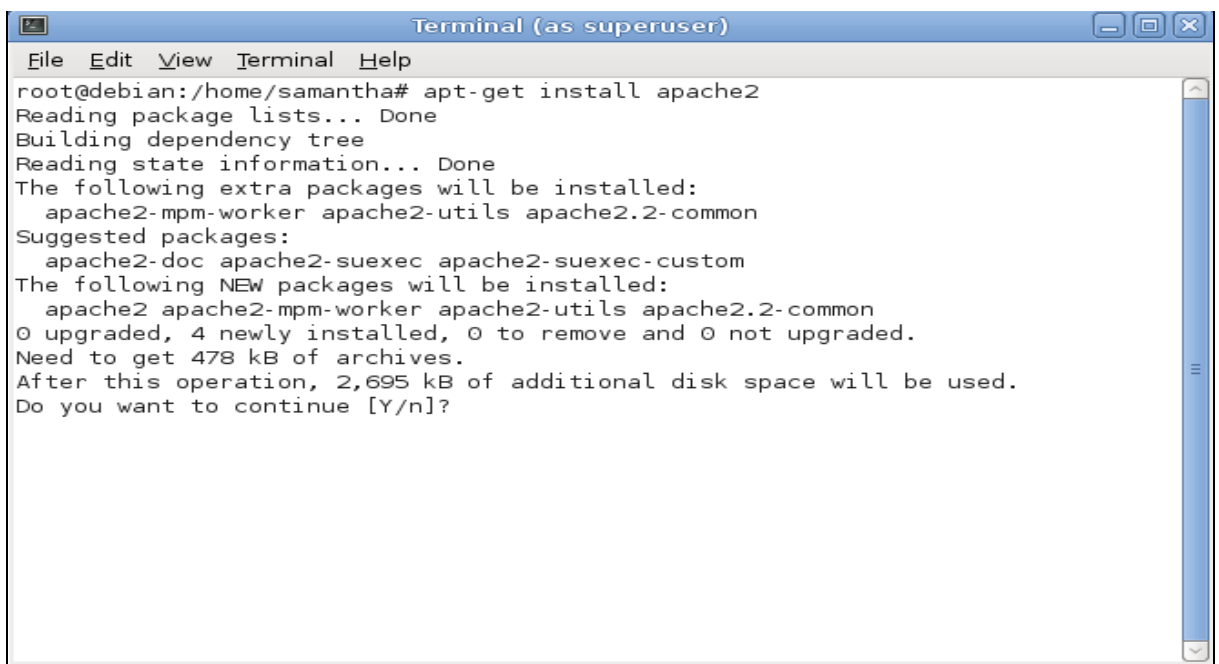
(i) Begin by opening the root terminal. Do this by pressing [Applications] -
     [Accessories] - [Root Terminal]. You may be asked for your root password.
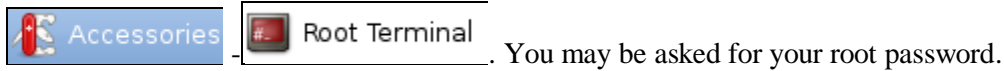
(ii) In the root type "**apt-get install apache2**" and press enter this will begin installation (fig 1)

(iii) You will then be told the amount of memory that will be used press Y to continue (fig 1).

Fig 1:

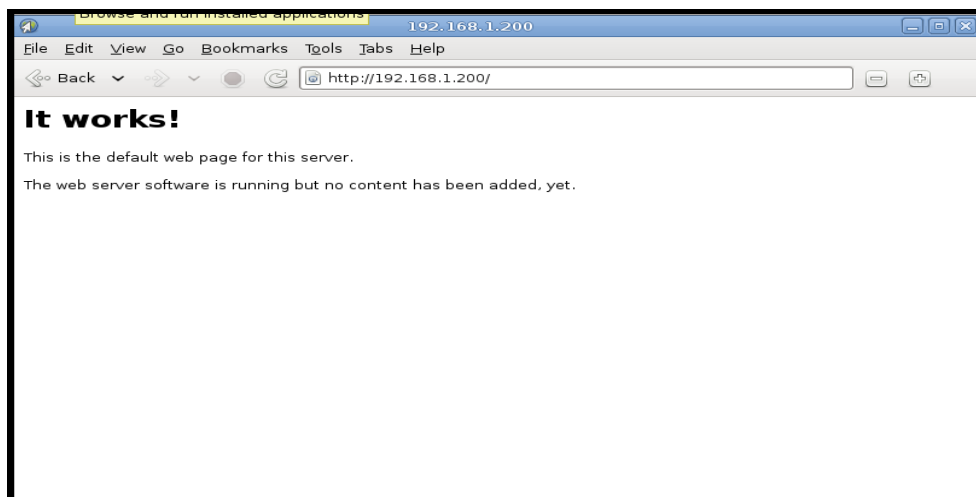This shows apache2 being downloaded in the root terminal.


```
root@debian:/home/samantha# apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  apache2-mpm-worker apache2-utils apache2.2-common
Suggested packages:
  apache2-doc apache2-suexec apache2-suexec-custom
The following NEW packages will be installed:
  apache2 apache2-mpm-worker apache2-utils apache2.2-common
0 upgraded, 4 newly installed, 0 to remove and 0 not upgraded.
Need to get 478 kB of archives.
After this operation, 2,695 kB of additional disk space will be used.
Do you want to continue [Y/n]?
```

(iv) To test apache installation type your "**http:// your Ip address**" into your browser this if apache is running figure 2 will appear showing you that apache is working. (To find your Ip type" Ip address show" into the root terminal it is the IPv4 address).

Figure 2:

This shows the apache test screen when you upload content it will appear here

It works!

This is the default web page for this server.

The web server software is running but no content has been added, yet.

(v) Now that you have installed Apache visit here http://wiki.debian.org/Apache to learn more about configuring Apache for file sharing and hosting of websites on a local intranet (internal network internet).

C.1.0: Web-server comparison

This section is a comparison of Microsoft internet information server (IIS) and Apache web-server. Debian uses the Apache version 2 which boasts a number of advantages. Firstly Apache is piece of free open source software. This means that as well as saving on cost you are also downloading a package that has been tried and tested by many skilled individuals over a long time. It being open source means that you will have extensive community support for any queries you may have or bugs you want to report. Apache also has support for a range of programming languages such as Perl, Python and PHP if you want to use dynamic components for a website. Apache is easily ported to different UNIX type operating systems such as Mac and other Linux distributions. (Aries. B, 2012). Apaches cost and portability have made it without a doubt the standout web-server for the masses but for sites with heavier traffic Microsoft IIS is marginally more commonly used according to a survey by W3techs (2013). Apaches strengths can also be its weakness as it is not made by a corporation, problems can be hard to solve even with community and apache foundation support (Burnside. K, 2013)

Microsoft (IIS) is an optional component of Windows operating systems. The version for Windows XP is IIS version 5.1 (Brown. M, 2008) One of IIS major draw backs is the price you must first buy a licence for a Windows Operating system and these can be considerably expensive but for the majority of computer owners this should not be a problem as Microsoft has the leading Market share with a massive 83.54 % of the OS market in May 2012 according to a survey by the Chitika Online Advertising Network (2012). For dynamic components on websites IIS makes use of ASP (active server packages) this allows languages such as C++, Visual Basic and Java to be used in site development. All this can be emulated however by the Apache system. The only area that IIS beats Apache is with Microsoft's .NET framework (Brown.M, 2008). Overall if you are going to choose a web server, choose Apache for its low cost and portability. Turn Apache's steep learning curve into a challenge for yourself.

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