Hard Drive Installation

Hardware Installation

1. Power off the system and unplug the power cord. Open the system enclosure and locate the drive bay that you will be using for the new drive.

2. Remove static electricity by touching the metal power supply case before touching any components.

Note: Static electricity can damage electric components. Always handle drives from the top and avoid touching contacts or internal components.

3. If there is already a drive present in the system, disconnect the gray IDE ribbon cable and power connector. Identify and remove any mounting hardware and screws and carefully remove the drive from the drive bay. Be sure to save any hardware that will be needed to install the new hard drive.

4. Setup the drive as a master or a slave; whichever is appropriate for the application. This is done by configuring the drive using jumpers, which are small plastic sleeves with metal connectors in them designed to connect two pins so that it closes the circuit between them. Jumpers are attached to a specific pair of pins on the drive that correspond with the desired setting. Information regarding which pair of pins corresponds to which setting is almost always on the drive label. Hard drive manufacturers also provide this type of information on their web pages.

Note: If this is to be the only drive in the system it will need to be setup as a master, or single if that setting exists for this particular drive. If the drive is being added to a system that already has a hard drive installed, the new hard drive will need to be installed as a slave and the drive installed previously will be setup as a master. The basic rule is there can only be one master and one slave per cable. The hard drive that will contain the system files needs to be the master and the other would be setup as a slave.

5. Install the new drive into the drive enclosure (along with any mounting hardware needed) and secure it using the mounting screws. Be sure the screws are put in straight; otherwise the drive may fail prematurely from excessive vibration.

6. Attach any of the larger 4-pin power connectors from the power supply to the power connector on the hard drive. The power connector is keyed so it can only be plugged in if it is oriented properly.

7. Connect the gray IDE ribbon cable to the 40-pin connector on the hard drive. Be sure the colored edge of the cable is pointed in the direction of pin 1 on the drive, which is usually near the power connector. Most modern drives and cables are keyed so that they only go in one way but it is worth mentioning because a reversed cable will cause a system to show no video when the system is turned on.

8. Plug in the opposite end of the gray IDE ribbon cable to the Primary IDE connector on the motherboard. If the connection can be plugged in more than one way, verify that the colored edge of the cable is pointed in the direction of pin 1 on the motherboard connector.

Note: Pin 1 can be identified either by an arrow or a small "1" near the pin one end of the 40 pin IDE connector but it is always a good idea to check the motherboard manual to be certain.

9. Replace the system enclosure, attach the power cable to the system and turn on the system.

10. Setup the system BIOS with the parameters for the new hard drive. If this system is being setup for the first time, be sure the system BIOS is also setup to boot from the A: drive first. Follow the steps below to do this.

Note: It may be necessary to refer to the motherboard documentation or seek the advice of technical support to complete the following steps.

   a. Press the key combination necessary, usually the Delete key or F1, to allow access to your system's BIOS or SETUP utility.

   b. Once you are in the BIOS utility, go to the section where it detects the IDE devices attached to the system. As the devices in the system are detected, the new hard drive should show up as the primary master.

   Note: If the hard drive is greater than 528 MB it will need to be setup in LBA mode. This is usually done automatically by the system but on some systems LBA needs to be selected.

   c. Check the system's boot up sequence and verify that it is floppy (or A:) first then IDE (or C:).

   d. Save settings and exit the BIOS utility.

Software Installation

Partition and format the drive

Once you have physically installed your new hard drive it must be configured for use. The way to do this is by creating a partition(s) and formatting the hard drive. A partition is a section of the hard drive defined for use, each of which are assigned a drive letter. It is possible to create many partitions on one drive but it is much simpler to make one large partition that includes the whole drive. If you are not running Windows 95B or higher, it is a good idea to upgrade to Windows 98, or your partition size will be limited to 2.1 GB. The reason for this is FAT32, which is available in later versions of Windows. To check your version of Windows 95, type VER at the MS-DOS prompt. (Start > Programs > MS-DOS Prompt > ver) Versions of Windows 95 that have FAT32 would be 4.00.950 B or 4.00.950 C. All versions of Windows 98 include FAT32. Keep this in mind while performing the following procedures – especially the next one.

Create a system disk

1. Place a **1.44 MB floppy disk** into the disk drive
2. Open your **control panel** and click on "**Add/Remove Programs**"
3. Click on the "**Startup Disk**" tab located at the top of the window
4. Make sure the disk is inserted in the floppy drive and click on **Create Disk.**
5. After a few seconds the disk will be complete. **You now have a Windows startup disk.**

If Windows is not installed on your system yet, continue to the next section. Otherwise continue to the section called "Existing Windows installation".

New Windows Installation

1. *Place a Windows startup disk in the A: drive of the system.*

2. *Allow system to boot from the startup disk in drive A:.*

3. *When the A:\ prompt appears, run the program FDISK to setup a partition(s) on the new drive. This is done by doing the following:*

   a. *Type FDISK and press <ENTER>*

   b. *If the version of FDISK you are using supports FAT32 (Windows 95 B or better), you will be prompted if you want large disk support (FAT32) when creating partitions. Type Y and press <ENTER> to choose FAT32.*

   c. *At the menu type 4 to view partition information and press <ENTER>.*

   d. *If the screen says no partitions defined continue to the next step, otherwise:*

      i. *Make a note at this time what type of partitions exist on the drive as you will need this information to delete them later in this step.*

      ii. *Press escape (ESC).*

      iii. *Type 3 and press <ENTER> to delete partitions.*

      iv. *Type number that corresponds to the type of partition(s) that exists on the drive, in the correct order (see note), and press <ENTER>.*

      v. *Look carefully at the table that appears at the top of the page and choose the number that corresponds with specific partition that you are deleting and press <ENTER>.*

      vi. *Type the Drive label as it is shown on the same table described in the previous step and press <ENTER>.*

      vii. *Type Y and press <ENTER> to confirm your choice.*

      viii. *Repeat steps 4 – 7 above until all partitions are deleted.*

   e.   *Press Escape (ESC) to go to the main screen.*

   f.   *Choose 1 and press <ENTER> to create a partition.*

   g.   *Choose 1 to create the primary partition.*

   h.   *When prompted whether you want the partition size to be the maximum capacity of the drive, press Y and press <ENTER>.*

   i.   *The program will then create the partition after performing an integrity check on the drive.*

   j.   *Press Y to exit the program and restart the system for the partition to be recognized.*

4.   *When the A:\ prompt appears, run the format utility to format the newly created partition on the drive. Typing the following does this:*

   Format c: /s

   Press <ENTER>

5.   *The format utility will then display the percent of the drive that has been formatted until it is completed. You will the have the option of labeling the drive or simply pressing <ENTER> to finish the process.*

   The next step is to install an operating system on the system.

Existing Windows installation

The simplest way to go is to add the new drive to the system and leave the operating system on the original drive, keeping it as master. If the new drive is going to have the operating system on it then it is a little bit more difficult. Both methods will be described below.

Using the original drive as master

1.   Once you have physically installed the hard drive into your computer, insert the startup disk and power on the system.

2.   Type **FDISK** and press **<Enter>**.

3.   If you are using a boot disk created in Windows 95 OSR2 or Windows 98 and have a hard drive larger than 512 MB, FDISK will prompt you to choose whether to enable Large HD support (FAT32). Choose **Yes**.

Note: If used Windows 95A to create the boot disk, this option will not be offered because only FAT16 is available. This will limit the size of partitions created on that drive to 2.1 GB. If you have a hard drive greater than 2.1 GB it is recommended that you upgrade to a newer version of Windows.

4.   The FDISK main menu will appear with the following options.

   1. Create a DOS Partition or Logical DOS Drive
   2. Set active Partition
   3. Delete Partition or Logical DOS Drive
   4. Display Partition Information
   5. Change current fixed disk drive (if there are 2 or more drives)

   Choose "**5. Change current fixed disk drive**" so you can choose the correct drive. You will then see two or more hard drives, your original hard drive and your new hard drive. **Select the new hard drive**. If your system does not have 2 or more drives and choice 5 is not available then continue to step 5 below.

5. At the FDISK Main menu choose "**1. Create a DOS Partition or Logical DOS Drive**".

6. At the new menu select "**1. Create Primary DOS Partition**". You will then be asked if you want to use the maximum available size for primary DOS partition. Choose "Yes" to create a single partition and continue to step 7. To create multiple partitions select "No" and follow the instructions below.

    Note: If your hard drive is greater than 2.1 GB and you are using FAT16 you will need to divide your hard drive into separate partitions—each with a maximum of 2.1 GB. Keep in mind that the 2.1 GB size limitation of Windows 95A will also apply to logical partitions. The same methods can be used to create multiple partitions using FAT32 but without the 2.1 GB limitation. To create more than one partition follow these instructions:

    1. FDISK will ask you to specify the quantity, in megabytes or percentage of the drive, which you want to allocate to the primary partition. FDISK will then return to the previous menu.

    2. Choose "**2. Create Extended DOS partition**" and allocate the remainder of the drive to the extended partition. Once this is created you will be prompted to create logical partitions within the extended partition. While doing the FDISK will prompt you to once again specify the quantity, in megabytes or percentage, to allocate to each of the logical partitions.

7. Now that the partition(s) have been created, exit FDISK and restart the system. Be sure the system disk is still in the floppy drive (A:).

8. After booting, the system will return to the command prompt. Perform the following steps to format all of the new partitions:

    1. Type **Format X:** (Where X is the drive letter of the new hard drive).

    2. After the drive has formatted you will be prompted for a volume label, which is simply a name for the drive. **Type in the name** or leave it blank and **press <Enter**>

        Caution: If your original drive is still installed, be sure that the drive you are formatting is the new one and not the old one or you will lose all data on that drive.

    3. If multiple partitions were created, repeat steps 1 and 2 with each new partition created.

9. Leave the system disk in the floppy drive and restart your system.

10. After booting, the system will return to the command prompt. Perform the following steps to make sure the drive is functioning correctly:

    1. Type **scandisk X: /surface** (Where X is the drive letter of the new hard drive).

    2. Verify that no bad sectors exist on the drive by carefully looking at the results that are displayed when scandisk finishes.

    3. If multiple partitions were created, repeat steps 1 and 2 with each new partition created.

Your new hard drive is now installed as a second hard drive and is ready for use by Windows. The next section will provide instructions for making the new drive the one your operating system is installed on. If you plan to keep your operating system on your original drive, your work is done here.

Setting up the new drive as master

At this point the new hard drive should be installed as the slave and tested using scandisk. The following section describes the procedure for copying the operating system from your old drive to your new drive. There are several ways to do this. One way is to use a utility disk provided by the hard drive manufacturer. Typically these utilities assist in overcoming limitations of the system and generally make the installation process simpler. Some of these utilities will even copy the contents of the original drive to the new drive. Check with the manufacturers for more information on the use of these programs and what they can do for you. At the end of this install guide there is a list of manufacturers who offer utilities on their websites for their customers to

download as well as contact information for their technical support. Another way is using 3rd party software that is created for this purpose. There are a few out there including Disk manager, Ghost and Partition Magic that can make the job easier. If there is no utility available to copy the contents of your old drive to your new one, it can be done by following the steps below. Before continuing it would be a good idea to perform a backup of your data—just to be on the safe side.

1. Power up the system and make sure there is no disk in the floppy drive. Once the system has booted into Windows, exit all programs except Explorer and Systray. To do this do the following:

   a. Press the CTRL-ALT-DEL buttons at the same time in order to bring up the "Close Program" window.

   b. Left click the program you wish to close.

   c. Left click the End Task button at the bottom of the box.

   d. Repeat the 3 steps above until the only programs remaining are Systray and Explorer.

2. Go to the MS-DOS prompt and copy the system files to the new drive. Follow the steps below to do this:

   a. Click **Start** > **Programs** > **MS-DOS Prompt**.

   b. Type **sys X:** (where X is the drive letter of your new hard drive).

   c. Close the MS-DOS window when the procedure is complete.

3. Copy all the files from the old drive to the new drive.

   a. Click **Start** > **Run**.

   b. In the Run field, type **xcopy c:*.* /h /i /c /k /e /r /y X:** (Where X is the drive letter of your new hard drive).

   c. An MS-Dos window will appear and copy all the files, while preserving the long file names, to the new drive.

   d. When all the files are copied, close the window and shutdown the system.

4. Configure the jumpers on your new hard drive so it is now the master drive, and either setup the jumpers on your old hard drive as the slave or remove it from the system. Verify that the IDE cable and power connections are firmly attached to the drives.

5. Set the primary partition on the new drive to active by using the following procedure:

   a. Place the system disk into your floppy disk drive and turn on your system.

   b. At the A prompt Type **FDISK**.

   c. Type **Y** and **press <Enter>** to enable large disk support if you're using FAT32.

   d. You will be prompted with the information that C is not an active partition.

   e. At the main menu, Choose **2. Set Active Partition**. This will activate the partition on your hard drive.

   f. Press **Esc** to exit FDISK.

Remove the system disk from the floppy drive, and restart your system. Your new hard drive should now be an exact image of your old hard drive—except hopefully it is much larger. Verify that everything is in working order by checking everything carefully and rest easy with the knowledge that your original drive still has all your old data. It is a good idea to leave it there until you are certain that your new drive is performing correctly.

Hard Drive Manufacturer Listing

Fujitsu - http://www.fcpa.com/cgi-bin/goFrames.cgi/support/su_driver_hd.html

1-800-626-4686 (5am - 9pm M-F, 7am - 3pm Saturdays)

IBM http://www.storage.ibm.com/techsup/hddtech/welcome.htm

1-888.IBM.5214 or 507.253.4110 (Monday - Friday, 7 am to 11 pm CST)

Maxtor - http://www.maxtor.com/maxblast/

1-800-2-MAXTOR - Option 1 (1-800-262-9867)

Quantum - http://www.quantum.com/support/csr/software/csr_software.htm

1-800-826-8022 Mon. / Fri. 6:00 a.m. – 6:00 p.m. Pacific Time

Seagate - http://www.seagate.com/support/disc/drivers/discwiz.html

1-800-SEAGATE or 1-405-936-1234

Western Digital – http://www.westerndigital.com/service/ftp/drives.html#dlgtools

EIDE Hard Support 1-800.275.4932 SCSI Hard Drive Support 1-888-932-7274