DIY Computer Repair

How to...

You have the parts, here you will find the technical expertise to complete your custom PC!

Trouble *shoot it!*

Laptops

Workstations

Custom

Upgrade It!

Hide it!

Gaming

Fix it!

Build it!

Servers

DIY Compter Repiar
How to mini guide
Monte Russell
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This book is dedicated to Robert W. Patchen. My friend, co-worker, peer, and mentor. You have a problem? Ask Bob, he knew it all, always with a bit of humor. Bob was the premier Help Desk and all around Computer Engineer. He was so good at his job he always had fresh baked cookies and brownies at his desk. He didn't bake them, they came from all the customers he took care of so diligently and always shared. Always pleasant but liked his CW music, sometimes it drove me crazy. Bob the Red Neck and very proud of it. Bob passed away from cancer earlier this year. Well Bob I know you will have a large pile of brownies when I get there.

DIY Computer Repair

Table of Contents

As always if you need to contact me about these procedures use my <u>support</u> page to send me an email.

DIY Computer Repair

At DIY-Computer-Repair you can build a custom pc!

All you need is the technical assistance and some how to's... at DIY-Computer-Repair! Want to find out how to custom build pc? Read on!

We'll help you learn about computer repair and how you can do the repair yourself. With the information provided you will be able to repair your pc, build a pc from scratch, optimize your system to make it run faster, or hide your pc from hackers!

How to build a pc from scratch even if the most technical thing you've ever done is change a light bulb!

Note: This page and some others will have links back to my web site, the information for those pages may be updated, so check them occasionally.

Some of the information and technical assistance you will find at www.diy-computer-repair.com. Answers to these questions are here, heck there is so much here I can't list it on this page but here are a few things at diy-computer-repair to help you:

[Note: the blue text that is underlined is an active link, right click to select the link.]

- Save some hard earned **money Build a custom PC**
- It is possible to **rejuvenate** an old PC! **Speed up that PC**
- Do you have a recovery strategy? **Back up that PC**
- It is easier than you think! **Fix that Laptop display**

- Why a Laptop battery will not last forever! **Laptop battery**
- How to open a Laptop case **with out destroying it!**
- Build a Gaming PC **that puts an XBox to shame!**
- Why your business needs a **Server!**
- **Hide your pc from those hackers/criminals/thieves! How to setup a router** to **make your network disappear** from the Internet.
- Would you want to build your own custom pc **a custom gaming pc**? (it's **easier** and **cheaper** than you think).
- **Your system running slow? Why not optimize it**?
- Hardware Reviews from **diy-computer-repair**!
- Do you need a **bootable device?**
- How do you **create an image** of your hard drive for **recovery purposes**?
- Have a problem with your Operating System? A small tutorial on the **System manager may help**!
- **Software?** Well really this is a hardware site!....... ok, you talked me into it, here are some reviews of software I think is essential for the overall well being of your pc: **DIY-Computer-Repair Software reviews**.
- **Are you looking for parts?** *Check out the diy-computer-repair Computer parts Index!*
- *And remember that you can build a custom pc with the help of diy-computer-repair!*
- **UPS (Uninterruptible Power Supply), Surge Protectors, Surge Arrestors, Replacement Battery Uninterupable Power Supplies, Surge Protectors**
- Need help with basic system functions: **Computer help - Learn how to use your computer**
- **Parental Monitoring Software U See IT *Recommended!***

You ask yourself '*Can I custom build a pc?*' **Of course you can!** You ask yourself '*Can I repair my pc?*' **Of course you can!** You can repair your car, your dishwasher, your washing machine! There are some things best left to the professional because they have the tools and the training to fix them, but most of this stuff is simple. (I could use that car insurance commercial here but....)

I am one of the last anti-geek's left in the world today. There are very few of us now. The original techno-phobes that didn't go off the deep end when we finished college. I realize that you, the average user or the busy business owner, does not have the time nor the education to fix everything, but with a little help and some technical assistance **you can fix that broken PC with the help from diy-computer-repair!**

With the how-to's I have written, you can **build a custom PC**, you can **speed up that old PC**, or you can **clean out** all that junk that has been accumulating on your hard drive for the last four or five years. Or even build a custom **Gaming PC**, you can find the information here!

So what do you need?

A new hard drive? **How do you know that?**

You want to upgrade your pc? **Why would you do that?**

You want to change your video to a higher resolution but the video card in your system is stuck at 1024 x 768?

What is your online speed? Dial up? DSL? Cable Modem? T1? Check out the glossary of **Definitions,** find out how to get the most out of your connect speed.

Want to know what all that "stuff" inside the pc case is? Check out the computer components pages. Baffle those computer "Guru's" with your new found terminology!

Do you have a web site? Need some tools to keep it in tip top shape?

As always if you need to contact me about these procedures use my support page to send me an email. [See earlier note about this]

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Repairing your computer

DIY-Computer-Repair can help you!

Repairing your computer is real easy if you take the time to read the instructions and follow safety procedures to protect you and the computer.

First and foremost unplug the power.

Do not assume that if the power strip is off , unplug the power cord.

I have a scar on my right elbow from not following this simple step!

Today's circuit boards are not repairable by the local handy man. With the advent of micro circuitry and SMD (Small Micro Device) technology, wave soldering, and wafer thin circuit boards component repair is out of reach of anyone who does not have a fully equipped shop.

What all this gobbodygook means to you is it is a throw away world as far as most computer parts are concerned. Unless your computer is still under warranty any component that has failed has no value.

Some manufactures support will ask you if you can change out the failed part. The advantage to this is you don't have to wait for the Tech to schedule his time to come and fix your computer. The manufacture will ship you the part (*free*) and you change it out, then ship the defective part back (*free*). One of the reasons for shipping the failed part back is to prove to the manufacture that the part did fail, another is some parts are repairable, hard drives for instance, proprietary main boards, power supplies because the manufacture has the equipment to replace the failed components.

This leads us to the actual repair. Some things need to be done before you yank out that dead device.

Some of the newer computers do not need tools to get components out, they are secured by spring loaded devices (latches).

You may need either a # 2 Philips screw driver or a # 15 torque to remove the screws.

You need to remember that **static electricity** will destroy delicate components. This is called *Electro Magnetic Discharge* (**ESD**)**, static electricity**. You can build up enough static electricity to damage an unprotected part by walking across the room. **How do you discharge the static electricity?** By *grounding yourself*, you can buy a static wrist strap at your local electronics store or online. You connect the alligator clip to the case of

computer, the power is unplugged so it is not grounded but the case will absorb any static electric you have built up by walking around.

I will tell you how to change out different devices and components by their name, check the pages for the check list I have created for you.

I recommend you print out these helpful pages for reference while you do your repair/upgrade.

Having a problem? I have answered technical questions at AllExperts, if you are having a problem check out the answers there.

Safety First!

DIY-Computer-Repair can help!

Do not assume that your power strip is off!

Disconnect the power cord!

Do NOT remove components while the computer is powered up!

ESD

You need to remember that Electricity will destroy delicate components. This is called *Electromagnetic Static Discharge* (**ESD**), **static electricity.** You can build up enough static electricity to damage a unprotected part by walking across the room. How do you discharge the static electricity? By grounding yourself, you can buy a static wrist strap at your local electronics store or online. You connect the alligator clip to the case of computer, the power is unplugged so it is not grounded but the case will absorb any static electricity you have built up by walking around.

Remove all JEWELRY!

A checklist of probable no power:

House power on? check

Power at the receptacle? check (the lamp next to the computer is on right?)

Unplugged and plugged in the power cable to both the wall receptacle and the computer power supply? Check

Tools:

Tools you may need to open your case and remove components:

Some of the newer computers do not need tools to get components out, they are secured by spring loaded devices (latches).

You will need either a # 2 Philips screw driver or a # 15 torque to remove the screws.

DIY-Computer-Repair can help you with safety!

Of all the things you need to work on your computer the main one is *Information*!

With information any task can be accomplished. You need to follow a few rules to accomplish your goal.

Safety is paramount! *Remove all JEWELRY!*

Rules:

1) Know what your objective is before you start.

2) Research your component, find out if the component will work with your existing hardware before buying.

3) **Always unplug the power when working on the computer!**

4) Keep static electricity from ruining you computer and replacement parts. (**ESD**)

5) Read all the instructions that come with the component you are replacing.

Check out the How to... pages for more information and guidance.

Repair checklist:

DIY-Computer-Repair can help!

Checklist for computer repair.

Identify the failed part.

Disconnect the power cord.

Ground yourself.

Open the case.

Disconnect any cables connected to the component.

Remove failed part by either removing the retaining screw or latch.

Set the part aside.

ENSURE *you are grounded.*

Remove new part from Anti-Static bag.

Carefully insert the new component into slot or bay.

Secure the part, be careful with screws that go through the component board, too much torque will crack the board.

Reconnect the cables for the component if there are any.

Check your work, **check the adjacent cards, drives, etc. make sure you didn't inadvertently bump something loose.**

Put case cover back on, this will preclude you from touching any components while the system is powered up.

Reconnect any external cables you disconnected.

Power up the system.

Watch for system startup screen, if you do not get a screen with in two or three seconds power the system down, disconnect the power cord.

Something has gone to ground, in other words there is a short between a component's power connection and the ground of the power supply.

Once you are certain nothing is loose or you have found the component that is going to ground and have corrected the problem put the case cover back on and reconnect cables and power it up.

CD Rom or DVD Rom Drive repair

DIY-Computer-Repair can help!

Dead CD ROM or DVD ROM drive, repair or replace?

As I mentioned in the introduction, repair of components is not economically viable. A really observant and talented individual could repair a failed cd rom, if it was a mechanical failure. Or if you had two of the same model drives, one that failed electronically and one that failed mechanically, you could change out the bad circuit board on the mechanical failed drive for the good circuit board and save your self thirty dollars. Or you could go buy a brand new one and replace it.

Check the case page for opening case and precautions. *Remember Safety First!*

Before you loosen up the drive you should disconnect the power cable, the drive cable, and the Audio cable. If you can not get your hand into the space to disconnect the cables pull the drive carefully out until you can gripe the cables. Usually the IDE Drive Cable will pull loose with a little force, there is a latch on the Audio cable. The cable that will give you problems is the power cable, they are made to not vibrate loose. You can use a pair of pliers to wiggle it loose, do not squeeze it to hard, it is plastic and will break, with a firm grip on the plug, working it back and forth while pulling gently will get it loose.

Note the wide cable, it is the IDE Connection cable, it will have a red stripe down one side. This indicates the # 1 pin side of the cable connector. Some cables that have been in the computer for a long time tend to harden from time and heat, you should not have to change the routing of the cable. Some cable connectors have a guide pin that will match the connector on the drive, this keeps you from connecting the cable backwards, some don't that is why you have to note the stripe. Look at both drives, the IDE cable connector should be orientated the same, note the notch for the cable in the connector on the drive, are they both orientated the same or are they opposite? If they are opposite then you will have to reorient the IDE cable before you install the drive.

Look at the back of the drive, next to the cable connectors there should be a double row of small brass pins. These pins are called jumper pins. You will see one or two small plastic covers (called Jumpers) over some of the pins. On the drive there should be a diagram that will tell you what the covered pins do, this is the drive selection.

Your choices for the drive selection are:

Master

Slave

Cable select

Set the old drive aside, check the new drive, **you need to match the drive select pin setting on the new drive to what the old drive has.** Either Master (two drives on same cable and this is the primary drive), Slave (two drives on the same cable and this is the secondary drive), or Cable Select (best selection for a single drive on a cable).

Once you have the drive selection set, reverse the removal sequence to install the drive. Once you have the cables reconnected and the drive back in it's bay put the cover back on the computer. I do not recommend powering up the computer with the cover off.

Check the drive:

When you power up the drive the startup sequence checks all drives, you should see the cd drive activity light come on, push the drive eject button, the tray should open if not, power the system down, you have a problem. (go to trouble shooting)

If you have power to the drive let the computer power up, put a cd in the drive, see if you can access the drive. Access?

Yes? you are done.

No? **Go to trouble shooting**

Hard Drive repair

DIY-Computer-Repair can help!

Most components in your system are expensive, the hard drive is no exception.

But if you think about the "bang for your buck" the newer hard drives are a super bargain. Consider this, one byte (8 bits) is equal to one character of typed text. Now you have a hard drive that has the capacity of xxx gig, that is xxx billions of single characters, how many books would it take to have say 300 gig of characters? A book case of encyclopedias? Two? Three? So a new 300 gig hard drive costs say $130, you get a meg for about $0.0105, that is less than a half cent per 250,000 characters!

Before we get to the actual replacement/upgrade we need to know what type of drive you have.

Is it a SATA (ATA Serial Drive) or IDE Drive?

Each have different connectors for both the drive controller cable and the power connection.

Replace or upgrade?

Replacement of a hard drive is a fairly simple procedure, Safety First!

Remember ESD will kill it before you get a chance to power it up! Use that static strap!

Open the case, look at the old drive (check the CD section for steps) note the cable positions. Disconnect the cables, remove the drive.

IDE only

Look at the back of the drive, check the drive select jumper, is this the only drive on the cable?

Yes: Then it should be set for cable select.

No: Is the jumper set for Master or Slave

Note: SATA drive selection is set by embedded software.

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All Drives

Reverse removal procedure.

Replace case cover, prepare to power up. (Check you computer documentation on how to get to the BIOS setup)

Power up, do you see the post?

Go to BIOS setup, your new drive should be listed. BIOS listings differ from manufacture to manufacture, if it is not displayed on the fist page, **look for storage**.

If this is a replacement drive that the OS (Operating System) was on then you will have to make sure that the drive is selected to be the Boot drive, also you will have to reinstall the OS. (check the programs listing for instructions on reinstalling your OS).

If this is a second drive and not the OS drive once you see it in the BIOS, check to see if it is listed as the boot drive, you do not want it to be the boot drive, change the setting.

Once you are confident that the drive settings for the bios are correct exit and let the OS load.

Once the OS is up and running you have to do two more things before your new drive is ready:

Partition the drive

Format the drive

Check the How to... pages to complete these two tasks.

Data Recovery Companies:

Ontrack Data Recovery Software
Data Recovery Do-it-yourself Software

Keyboards and Mice repair

DIY-Computer-Repair can help!

Keyboards:

Because we are human things happen. Like the coke spilled on the keyboard. Paper clips and staples get dropped, the keyboard has a magical attraction to these items. When I was a computer tech I found numerous items in keyboards: paper clips, staples, mechanical pencil lead, and even a diamond ring (not of high value) that the user didn't even realize she had lost!

A keyboard is your life line to your documents, you can open one and read it with a mouse but you can not modify it with the mouse (well that is not strictly true, if you have the Accessibility Options installed there is a mouse operated keyboard there......) so you need to keep it clean.

How do I clean the keyboard? Is it worth it?

Keyboards and mice are the cheapest components for the computer. They are also the most abused components. Because these components are so cheap it is better to replace than repair.

Cleaning the keyboard:

It is not recommended that you use liquids on keyboards. The reason is the circuit board under the keys is not sealed to keep moisture out. If you spill coke, coffee, tea, etc in the keyboard go buy a new one.

The best way to clean dust, fur, and general gunk is with a small fairly stiff paint brush and a can of compressed air. With the computer off (you don't want to be pressing those keys with the computer on!) use the brush to move the gunk to an area where the air can blow it out of the keyboard. The paint brush will get under the keys if you apply slight pressure. If the keys are just dirty with normal use you can clean them with a damp cloth, **I have found window cleaner works best, do not spray the cleaner on the keyboard, spray the cloth and use it to wipe the keys.**

Mouse:

Does your mouse **stop when you move it from one side** of the screen to the other? Have to pick it up and put it down to get the cursor to move?

It is dirty! There are two types of mice, analog and digital. If you have a wired mouse and it does not have a led on the bottom then it is a analog mouse. By analog I mean there is a mechanism that moves the cursor. Turn the mouse upside down, you will see a small neoprene ball. This ball moves two small bars (or wheels) that turn what is call a potentiometer.

Cleaning the Mouse (analog)

There should be a way to open the cavity that the ball is house in, some are plates that rotate one way to open the opposite to close and lock. Open the cover, drop the ball into your hand, using a lint free cloth and window cleaner wipe the ball, it has gunk on it from the mouse pad.

Inside the cavity there should be either two bars and wheel or three wheels. Look at them, you will see gunk that has built up over time. We want to remove this buildup. I use a small screw driver but a paper clip that is straitened out will do the same thing. The hardest part is getting the build up off the bars and wheels, they spin freely. When you get the buildup off it probably fell inside the cavity, you can shake it out or turn the mouse right side up and use compressed air to blow it out. Clean? Put the ball back in the cavity, cover back on and lock it.

Mouse pads can be cleaned also, the cloth covered type can be washed with soapy water, it will just take time to dry. Window cleaner works on the hard type pads the best.

Motherboard repair and trouble shooting motherboard problems.

DIY-Computer-Repair can help!

Repair Motherboard

Consider this: Do you have the tools and knowledge to do low level component repair? Do you know what I mean by low level component repair?

If no is the answer to either of these questions then there is no repairing the motherboard for you. There is however things that can be done to a main board that is malfunctioning that does not require repair of the board itself. So this section will deal with trouble shooting and things that can be repaired/replaced.

Before opening your computer case check the *safety precautions !!*

If you have a proprietary computer there in not a lot you can do besides diagnose your problem then call the manufacture support and get it replaced.

Trouble shooting motherboard problems.

Most manufactures buy their bios from programming houses like Phoenix. Some manufactures have their own in house bios programs, like Compaq (now HP). These bios programs have a section for *diagnostics*, some of them are accessible by the user others are not. Most have a way to tell you there is a problem with the computer, these are "**post**" codes (*Power On System Test*). Some also have "**beep**" codes, the computer speaker beeps a certain code for different failures. The main thing is when you turn on the computer you either get a number on the screen, the computer starts beeping, or it dumps into the BIOS setup screen.

I can not list all post and beep codes here but they can be found by noting the BIOS program name when the computer starts up, then searching the web for the codes by the programming house name.

From the post or beep code you get a general idea of what the problem is. Memory? Video? Keyboard? Mouse? and so on.

Most problems with components can be resolved fairly easily and quickly. Sometimes reseating the component will take care of the problem. Sometimes removing the component and putting it back in will clear the problem. If the problems persist after reseating it then it is dead, needs to be replaced.

The main thing is troubleshoot the problem before replacing it, this will **save** you some money.

Network Card repair

DIY-Computer-Repair can help!

The network card allows you to connect to other computers either locally or over the World Wide Web (internet).

Before we get to involved with trying to fix a network problem this site can not give you all the steps you will need to fix a network problem, it is just too complex. I can how ever help you trouble shoot it for the most common problems, if these steps fail you will have to call a local tech to assist you. By using this guide you may **save** your self some money by fixing it your self.

These cards are a go no-go type of component. They either work or they don't. However most problems with network card are caused by configuration failure.

By configuration failure I mean that the card is getting the wrong information to allow it to do it's job. *If you have reseated the card, checked the cable is connected and still having problems connecting then the next step is to trouble shoot the configuration.*

Steps:

A) Go to start, then accessories, then command prompt. Type in - *ipconfig*
You should get a listing like this:
Ethernet adapter Local Area Connection:

Connection-specific DNS Suffix . : homecomp
IP Address... ………………. : 192.168.1.4
Subnet Mask .. . . : 255.255.255.0
Default Gateway . . . . : 192.168.1.1

If you do not see this then you are having a configuration problem, you need to check the properties for the network card. If you see this go to how to check for connectivity.

B) **Check the properties of the card in computer** management/device manager. Does it have a red circle with a slash over the icon? Does the properties say "Device is functioning normally" or does it say "The drivers for this device are not installed. (Code 28)" or something similar? (go to reinstalling card/drivers)

C) **If the card is green and the properties display** "This device is working properly." you may have a configuration problem.

D) **Go to My Network Places**, right click, select properties from menu. Network properties opens, do you see the "Local area Connections" or just "New Connection"? Right click on the "Local area Connections", select properties from menu.

E) **DHCP Settings:** When you look at the properties page you should see at a minimum four items that are checked. The main item of concern in the box labeled "This connection uses the following items:" The one you want to check is labeled "Internet Protocol". High light it and go to the properties button. When it opens the area we are looking for is "Obtain an IP address automatically" the radio button should be checked, the boxes below should be grayed out. Close the TCP/IP Protocol page.

F) **Static IP Settings:** The main item of concern in the box labeled "This connection uses the following items:" The one you want to check is labeled "Internet Protocol". Highlight it and go to the properties button. When it opens the area we are looking for is the IP, Subnet Mask, and Gateway. Normally these would not be set unless you have a Local Area Network setup with a DNS server. If this is the case you need to know what the ip, subnet mask, gateway, DNS, and Wins addresses are for you LAN. If you hired someone to setup your LAN they should have gave you a configuration document, if not you may have to call them to get the information. If any of these parameters have changed, you will not be able to connect.

Network Card repair page2

DIY-Computer-Repair can help!

Scenario: No connectivity!

Lets say you can not connect, you can do not have an ip listed when you run *ipconfig*. You can do a little trouble shooting before you call the "Geek Squad".

Setting the IP

If your system is set for **DHCP** and you are getting your IP from your Cable Modem or DSL Router you can fake it out by entering your own ip. Most generic Cable Modems and DSL Routers use this subnet to give you an IP: 192.168.1.X where X is any digit above 2. If you have more than two computers connect to your Cable Modem or DSL Router use this ip to fake out the **DHCP**: 192.168.1.130, you will also have to set the subnet mask: 255.255.255.0 and set the gate way:192.168.1.1

Don't worry about the lower block for DNS.

Now go to the command prompt you opened and type: ping 192.168.1.1
You will either get a reply from the Cable Modem or DSL Router or you will get a time out on the reply.

If you get a reply from the ping then shut your system down and restart, once it is running again go back to the network properties and remove the ip address you put in, just check the **DHCP** radio button, apply changes, this should take a short period to complete.

Go to the command prompt, type in *ipconfig*, does it look like the sample?
If it comes back with an ip, in the command prompt type: ping 192.168.1.1
Do you get a reply? Yes?
From the command prompt type: ping *www.google.com*

Reply? Yes? Fixed.

If these steps fail to resolve your problem you will have to call for a local tech to assist you.

Power Supply repair

DIY-Computer-Repair can help!

<u>Power supplies</u> are one of the most reliable components in your computer.

With only one moving part and a design to compensate for heat the power supply should out last the rest of your computer. For the most part the only point of failure in a power supply is the cooling fan.

<u>Power supply</u> failure is catastrophic, by that I mean it is either working or not working. There is no post or beep code, nada, the computer will not start. For trouble shooting prior to repair see the Info page, here we are going to look at changing a dead power supply.

Disconnect the power cord! Safety First!

You will have to open the case to do the following procedures. You may have to take the power supply out before you even find the new one, if you have a digital camera take some pictures of the interior of the computer, you can refer to the pictures when you reassemble it, especially if it takes a long time to get the new part.

If you have a proprietary computer then you can check the web site for the correct power supply for your computer by make and model. For those of us that have clone, home built, or BIG computers we will have to check the power supply for information before we purchase a new one. Most power supplies have a label on them that give you the wattage and maybe a manufacture with a part number. The main thing we are looking for is the wattage. If you have to replace a power supply because of failure I suggest you go to a higher wattage power supply. Next you want to look at the connectors. The connectors are two types, the mother board power connector and the accessories power connectors (connectors for drives, fans, etc.). Some ATX power supplies also come with the SATA power connectors. The main power connector will be the AT (almost obsolete) or ATX, the AT has 20 pins, the ATX has 24 of pins. Next you need to know the dimensions of the power supply, if you purchase a power supply that is to big to fit into the bay the old one came out of you will have to return it and get the correct size

A picture is worth a thousand words. If you can get to the web, search for power supplies and find one that looks close to what you have, then read the item description, check the cables, do they look the same?

Ok, got the new part, set it beside the old one, do they match up? Some power supplies

have tabs that lock into the bay where the power supply is installed. Everything OK? Do you remember how it came apart? No? check your pictures!! Reassemble the computer, power supplies do not need a burn in in case you are wondering.

All back together? Check your connections one more time, tug on them, they should not come out of the sockets. All good, put the case cover back on, reconnect the external cables, power it up.

Good to go?

No? *Disconnect the power cord!!*

Check your work something is going to ground. Check all the connections, compare your work with the pictures you took before disassembling the computer. Check the memory and any card in the slots, one of them may have been bumped and came partially out of the slot.

All good?

USB (Universal Serial Bus) repair page 1

DIY-Computer-Repair can help!

Trouble shooting USB devices:

Back in the day (my son's favorite saying if it is over two years ago) computers came with a parallel and a serial port for connecting external devices (besides keyboard and video). Parallel was for the printer and a couple of specialized devices. Serial was for things like modems, EPROM burners, or sometimes a mouse.

Newer computers have USB ports that replace both the Parallel and the Serial ports. The best of both worlds have all three. My laptop is brand new, no parallel, no serial, no mouse, or keyboard ports but it has three usb ports, and surprise one is on the front of the computer, amazing.

This is kind of ok, most devices are going usb anyway, but **if you still have the old devices you will have to install a card with the appropriate port to utilize it.**

So what does this mean to you? One thing is how many ports do you have? How many devices do you want to connect? Older devices were the 1.1 standard the newer are 2.0. Do you want to be able to boot your system from your usb floppy or cd-rom, how about your flash drive?

Lets look at the standards first.

1.1 is the original ISO (International Standard Organization) for USB. The standard specifies how the usb protocol will be implemented and what is expected from devices utilizing the standard. The main factors here are the type of connector used on the computer and the device and the connection speed.

(**Note: the original specification did not have a provision to power the device down while the computer was powered up, to disconnect with out damaging the device or the computer you had to power every thing down.**)

2.0 is an upgrade of the ISO standard, that specifies a faster speed for the device, adding a provision that the computer could turn the device off (power it down) before disconnecting, this also allowed for the user to connect the device while the computer was powered up. Very handy.

Connecting and Disconnecting USB Devices

Most of the 2.0 standard software is built into the drivers that are installed by the OS

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when it is installed, although some devices have their own drivers when you purchase the product. So the only time you have to worry about 1.1 version USB is when you connect the device and then want to disconnect it while the computer is powered up. Windows XP has an icon in the system try that looks like a arrow pointing down over a green card, this is the "Safely Remove Hardware" program. If you open it up any device that the OS can power down is listed here. There are a couple of devices that will be listed here that are not usb devices, laptops will list a CD/DVD that is considered docked, some laptop PCMI cards will be listed. If you select a device and click on the "stop" button you will get a message that the device is safe to remove, but if it is a 1.1 standard it may not be powered down! Other times you will get a message that the device can not be safely removed, there may be a file open on the device or the software is telling you it can not power down the device. Either way do not disconnect the device you could damage the device and or the computer. In this case you will have to power everything down to disconnect it.

USB (Universal Serial Bus) repair _{page 2}

DIY-Computer-Repair can help!

How to trouble shoot a USB devices:

Sometimes you connect you favorite device and it just don't want to play today. I have a <u>usb</u> Joy stick that I like because it has three more functions than a regular joy stick. I like flight simulators, especially combat aircraft (wonder why). Any way some days it works as advertised some days it will not even show up in the game controllers.

One of the problems I have encountered with Universal Serial Bus devices is that the ISO Standard 1.1 and 2.0 have conflicts with some devices. Newer devices work fine on newer computers, but act up on older computers. No continuity with the backwards compatibility. There are two ways around this, one is fairly cheap and easy the other is costly.

Older systems and Universal Serial Bus hubs. If your computer is older than three years old then the USB is defiantly version 1.1. If it is between two and three you have a 50-50 chance on it being ether one. Unfortunately you can not up grade the bios and take care of the problem. The problem is the USB controller chip on the main board.

So what can you do? Well you could upgrade all your hardware...very costly. Or you can add a USB 2.0 card to your system. You can get a card for either a desktop or a laptop. If you want you can disable the 1.1 ports through the bios or you can leave them turned on and have more ports. My desktop has eight ports, two 1.1 ports, six 2.0 ports.

Don't have enough ports? Add a hub. A hub connects between the computer and the devices. They come in different sizes and are powered and non-powered. You can find them with two, four, or eight ports so far I haven't seen a 16 port yet.

Powered or non-powered?

Case in point:

I worked on a system that had a USB printer connected to it, some times it was ok some times it would only print a partial page. Dove me crazy for about a week, today it works tomorrow it won't. It was connected to a 2.0 ver port on a almost new computer. There were two other printers in the office but only this one was color so moving it was out of the question. I changed cables, I changed the port it was connected to. I uninstalled and reinstalled the print drivers. I asked if the user had stopped the printer with the "Safe to Remove Hardware" program, nope. Then one day I had my laptop with me when I

went to see the user, in the computer bag I carried a powered hub, I put the hub between the computer and printer. No more problems.

Some times the port can not supply enough power for the device it is connecting to, laptops are especially prone to this problem. Another reason for using a powered hub is how many devices you have connected and how far the furtherest one is from the computer. USB specification does not give a maximum distance for a cable. I saw one computer the guy had three scanners, two printers, two external cd-rom's, and usb mouse and keyboard. Looked like a spider web. To over come the port problem he had two eight port usb powered hubs. He said he never had a problem with the setup.

Another problem I have over come with a powered usb hub is distance. A user had a small work space (you can't call them cubes any more) and need to connect to printer that was about fifteen feet away. The longest usb cable I could find was eight feet. Two eight feet cables would reach the printer. With the hub in between the cables I could reach the printer.

Video repair

DIY-Computer-Repair can help!

Video has two components, the card and the monitor.

Both rely on each other, you can have a high quality 21" flat screen monitor but the display looks like ....., well you know what I mean.

Cards:

Video cards just keep on getting better and better, faster and faster, higher and higher resolution.

Pick you poison, there is one for everyone. **One bit of advice: don't buy cheap.** Been there done that. This is another one of those go no-go cards, you see it on the monitor or you see nothing.

Sometimes when you have a video problem the computer will beep. If the video is embedded on the main board and the video goes out you have two choices. You can change out the main board (if you have a proprietary computer and it is still under warranty then it may be free) or you can install another video card.

Since the advent of PCI, I have not seen a video card fail where you actually see a symptom of pending failure. Some times the older cards would cause the screen to flicker or change colors unexpectedly. Then again the old monitors would do that also.

I**f you suspect you are having a video problem.** the screen is off center, it is fuzzy, it is to dark or to light there are three sources for the problems. One could be the video cable, one could be the card, or it could be the monitor.

There are programs that will test both the video card and the monitor, they are fairly comprehensive and non destructive, you can find them on the web, shareware, free, or purchase. I would go for a shareware where the program is fully functional for a short period then you have to buy it. These are good programs for trouble shooting real problems.

Monitor:

Suppose it is fuzzy:

So you checked your cable, it is tight, you reseated the card, no change still have a fuzzy display. If you have a spare display connect it to your system, if the video isn't fuzzy then

you have eliminated the need for a test program, it is the monitor. If it is still fuzzy then you eliminated the monitor, it is the card.

There is one other possibility: do you have a fan close by? If so move it or turn it off.

If it constantly is off center:

Try adjusting it with the built in controls on the monitor. Fixed? No? Then try it with the software that came with the video card. Fixed? No? Down to the last resort, if the monitor is off center and using the tools available with the monitor and the video card I would say time for a new monitor.

To light or to dark:

Same as off center.

Upgrading your Computer Components

DIY-Computer-Repair can help!

Build a custom pc!

Your computer is slow, the display won't display your latest and greatest program, you go to the internet to surf and it takes forever to load a page, You have some choices on your upgrade path. Research will point you in the cheapest direction. Or you could **build a custom pc!**

Your first objective is to define your upgrade path. If you have the money you could go for a complete new system, if you decide on a new system your choices are buy a system or build it your self (BIG Computers Inc). Or you could take your current computer and upgrade some of the components.

So you do your research. What you find is your current system can be upgraded and will have a significant impact on the performance or you find that your system is either to old or is to proprietary to do any thing with. Now you have to figure out which way you want to go, do you lack the funds to buy a new computer or can you afford a brand new one? One of the pitfalls of buying cheap is you get what you pay for. So if you are upgrading components consider spending a little more for a higher quality item. The few extra dollars you spend now will save you from buying the same item again in a year or so.

Having a problem? I have answered technical questions at AllExperts, if you are having a problem check out the answers there.

Upgrading your Computer Components page 2

DIY-Computer-Repair can help!

Memory: The cheapest and fastest upgrade to any computer is increasing the memory. Current memory prices are the lowest ever. You can see a quantum leap in performance by just doubling the current amount of memory in your computer.

Storage: Hard drive space is one of the more expensive upgrades you will do. Increasing storage space allows you to save more documents, load more programs, gives you a backup path.

Video: If you are thinking of a video upgrade you have to consider two things: the video card and your monitor. One or both? Is your current monitor new enough to support higher resolutions? Do you want to upgrade to play the latest game that needs 1024 x 768 with 64,000+ colors? Or does your computer drag when you open up a picture and you have other programs open?

Audio: Speakers or sound card? Lousy sound could be either one. One way to tell if it is the speakers is by distortion, in other words is the sound crisp or muffled, maybe some sounds don't come out at all. Maybe you want to add some functions to your Audio card that the current one doesn't have.

Keyboards and Mouse: Keyboard looking like you picked it up in the dollar store? Mouse getting on your nerves? Want wireless because the cables are to short? Want more functions?

Network: Unless you have a very old network card there is no reason at this time to upgrade a network card. Most network cards under five years old are running at 100 MBPS (mega bytes second). The only reason to upgrade your network card is to go to the 1000 MBPS card, unless you have a 1000 MBPS network this is a waste of money. If on the other hand you are building a new system then by all means select a 1000 MBPS card sooner or later the rest of your network will catch up. The only viable upgrade for a network at this time would be your hub.

Upgrading your Computer Components page 3

DIY-Computer-Repair can help!

Modems: Dial up modems are at their maximum speed, if you have an older modem that gets say 28.8 or less connect speed you may want to buy a new one and get the 58.8 connect speed, makes a lot of difference when you connect. Check out the page on how to increase your Connect Speed before spending your money. Cable and DSL modems are the property of your ISP provider and they will upgrade those at their discretion.

Power Supply: If you are adding components to your computer consider the power supply. Most computers come with an adequate power supply that will support a few additional components. Lets say you have the typical computer, one hard drive, one CD-ROM, regular video, no extra fans, you haven't upgraded the processor, same sound card, etc. Stock computer. Now you want the latest and greatest video and a new sound card, more memory, and a new second hard drive. You power supply may not be able to carry the new load you are putting on it. You need to look at the power supply in your computer, it should have a label on it telling you the wattage it supplies. Normal computers (not specialized) have a 200 or 300 watt power supply. Adding one or two components will not cause any problems, any more that that I would suggest upgrade to a power supply that has a higher wattage output.

CPU: Or processor upgrades. Memory will give you a large performance increase, so will a new processor. The cost of a processor upgrade and how far you can take the upgrade depends on your motherboard. A few manufactures have a upgrade path built into their motherboards, others don't, my computer main board (ASUS) supports Pentium IV, I have upgraded it three times, it currently is running at 2.8 GHz. (slightly overclocked, see Overclocking). To tell if your motherboard can take a newer processor will take a some research, you need to check the manufacture's web page for specifications. You need to know what processor you currently have, then check the specifications for a listing of supported processors.

Motherboard: Or mother boards, upgrading these will depend on your case and how much you have to spend. If you have a proprietary computer there may not be a motherboard that will fit the case. You also have to consider if you want to upgrade the computer for function or speed. If you can use your old components it will be cheaper. Which components will work on the new motherboard? The

processor? The memory? Is it smaller? Will the cables for the hard drive(s) and CD-ROM reach? The location of these connectors may not be in the same place as the old main board, may be as far as six inches further away. (My fist ASUS main board had the connectors along the right hand side close to the drive bay, the new one all the connectors were on the left, all my drive cables were four inches to short, even the cables supplied by ASUS were to short.)

See each item's page for more information on upgrades.

Upgrading Audio

DIY-Computer-Repair can help!

Considerations - Your latest and greatest game sounds like Cr.., you have a voice to text program that you either can not use or you get a lot of errors when you try to input your text. Lots of reasons to upgrade the sound capability of your computer.

The only thing you need to worry about with a new sound card is do you have a slot to put it in? Most embedded sound devices can be disabled from the bios.

So how do you know what you want? **Well what application will you be using that requires sound?** That may drive your choice, some applications require drivers to communicate with your sound card, **if this is the case check the application for recommendations.**

As with all **components research** will give you a better idea of what "features and functions" a certain sound cad has, *you wouldn't want to pay $2000 - $3000 for a Midi sound card if you didn't want to make music. S*o what do you want it to do?

When you upgrade your sound card remember that **your speakers are probably the same age and wattage as the old sound card,** *be careful you don't over drive them with all that new power!*

Upgrading your Computer Case

DIY-Computer-Repair can help!

Upgrading your computer case?

The main reason for upgrading your case is to get more room or more bays for drives. Like buying a new house because you have out grown your old one, need more bedrooms for the children you didn't have when you bought the first house.

As with any upgrade you should consider the functionality of your purchase. Are you going to use components from the old computer? Or is this going to be a brand new system? What do you want to do with the system? Is it for your business or is it going to be a multifunctional system to cover all your computing tasks?

Make your self a "wish" list of features you want to have or add to the computer when you are done:

Hard drives: Two, three, four?

CD/DVD drives: Two?

Internal Floppy drive?

Fans? Extra cooling

How big? Small to fit on your desktop, medium, or a full tower to go under your desk?

Some cases come with a power supply, do you want to take the stock power supply or upgrade to a higher wattage to support more devices?

Esthetic? Want a case you can see the insides? Or one that is a certain color to match your drapes?

Accessibility? Some cases are a bear to open, some have hinged covers, if you are going to add more drives in the future you need to have more bays that are family easy to get to.

HotCoat Powder Coat your computer case!

DIY-Computer-Repair can help!

HotCoat Powder Coat!

I **have found a new idea, actually a friend is my source.** He has a nice computer case that he wanted to repaint. The old IBM beige color is passé so he went out and bought a HotCoat Powder Coating kit. With a little work and a couple of hours he had a old case with a new color and was extremely satisfied with the project. The only draw back to Powder Coating is that the parts have to withstand 400* Fahrenheit, so no plastic parts can be painted.

The procedure isn't for everyone, the cost of the gun and paint are about the same as a new case, but hey! what if you like your old case or a new case doesn't come in the color or colors that match your drapes? Well DIY and HotCoat Powder Coating may be your answer! This product will save you some money! Hot Coat Airless Powder coating Gun

The procedure:

As with any painting job the results are in the prep of the end product. It is more important to do a correct prep with Powder Coating. Any residue either grease, oil, or dirt will cause the paint to bubble or not adhere to the area that retains the foreign material.

Step 1:

Disassemble the case, if you are only doing the case cover it should be all metal, *remove any plastic or rubber parts*. You will have to remove all the old paint from the case down to bare metal. You will have to use a chemical to completely degrease the case. No residue of any kind. Any grease, oil, or dirt will cause the paint to either bubble or flake off, you can use this to clean the metal: EW Pre Painting Prep Aerosol 11oz

Step 2:

Apply the paint, using the kit you can complete this section in less that 10 minutes, unlike conventional paint, power coat *will not run*.

Step 3:

Bake the part at 400* in an electric oven for the specified time. Once the baking is complete, let the part cool. When the part has cooled you have your new case cover.

If you think this may be for you check out this informative book:

EW Begining Powder Coater's Handbook

You can find more information and products here:

Upgrading your Keyboard and Mouse

DIY-Computer-Repair can help!

Upgrades for Keyboards

Not much to upgrade on the keyboard. You can however get a few more functions, esthetic, and comfort from a new keyboard. To some people the old straight keyboard is uncomfortable, you can get one of Microsoft's ergonomic keyboards, you will have to relearn how to type on it.

Some new keyboards have extra buttons for email, web surfing, etc. These are just short cuts to the program you push instead of clicking on the icon, a word of caution - *you have to program the factions.*

Upgrades for your Mouse or pointing device

Like the keyboard a mouse upgrade is mainly functionality or ergonomic. Mice only come with two buttons and/or a wheel.

The main upgrade for either of these items is from wired to **wireless**.

Upgrading your Memory

DIY-Computer-Repair can help!

Upgrading your memory is the one of the *cheapest* ways to get a large performance boost.

On the other hand if you all ready have an abundance of memory (say over a gig) then memory will not solve your performance problems.

Memory comes in different forms, speeds, and sizes.

Forms - Currently in use in computers there are two DDR and SDRAM (includes DIMM)

Sizes - Range from 64Mb (megabyte) to 4Gb (gigabyte).

Speed - The speed of the ram installed is controlled by the main board when it was manufactured.

Lets say you have a Pentium IV processor, you have 256 meg of ram and it is in the DIMM form. If you have the main board installation guide it will list all the ram types the main board supports, also listing the speeds and maximum size for each slot. If you don't have the installation guide have two choices on finding out what ram is installed in your computer, the easiest is to go to the main board manufactures web site and search for the information on your main board. Or you can open up your computer and look at the markings on the ram itself. **If you do open the case up remember ESD will kill anything you touch if you are not grounded.**

With this information you can search the web for suppliers of third party ram. They will have table that will list all the ram that matches the form and speed you are looking for, just pick the size you want to upgrade to.

Quality - Quality counts. Remember buy cheap get cheap. You are doing this yourself to **save** money but doing something twice costs twice as much.

Upgrading your Modem

DIY-Computer-Repair can help!

One consideration to upgrading your modem is speed the other is fax capability (cheaper that a fax machine). The maximum speed for analog modems is 58.8 KBS. (**KBS** stands for Kilo *Bits* per **Second**)

If your current modem is a 58.8 KBS then there is no reason to upgrade, *if you don't have a fax or voice capability* and would like to have it then you could do that.

If you have a 58.8 KBS modem and are not getting that speed when connecting it more than likely is your phone line. Have the phone company check you phone line, *some phone companies will not guarantee more than 28.8 KBS on a analog phone line.*

Upgrading your Motherboard

DIY-Computer-Repair can help!

Upgrading your [motherboard](#) will increase your computers functionality, speed, and sometimes add some accessories.

Have a look at the Motherboard Reviews pages.

Considerations and pitfalls when upgrading.

Factors: [processor](#) and [memory](#), sometimes the additional cards that are installed in the computer. What you want the computer to be when complete, cost.

What do you want to accomplish?

Make a list, in one column have the current main board and all the components in your computer. In the other column list what you want. Research your new main board, change the column of the new main board, some of the features of the new main board may be different or better than what the old board has, such as embedded network capability, you can get rid of the network card, or the built in Audio is of better quality than the old sound card you have. **Two of you main concerns are the processor and the memory of the new board,** *can you use your current processor and memory or will you have to **upgrade** that also.*

Costs - in the old days you would gather up two or three catalogs, go through them and compare costs of one item from one company to another company. Maybe the item had the same manufacture, maybe not. A little tedious if you were buying a lot of different items. Now you can make a list with a spread sheet, research your items on line and compare. So do your research, an hour now will save you a lot of money later when you order the parts to do your upgrade.

Quality - This should be one of your questions while researching costs. If you buy cheap you get cheap, spend less now and you may be spending more later.

You have selected you motherboard, you know if you are re-using some components or buying new.

The next thing you need to know is *will it fit your [computer case](#)?* Check the dimensions or go to the manufactures web site and down load the installation guide, it will give you insight to the physical characteristics of the main board. Like the lay out of the ports, where the drive connectors are. With this information you can compare you case and the location of cables. Nothing like getting the new main board and finding you have to modify the case to get to the keyboard and mouse ports because they are in a different place than the old one. Or finding that the hard drive cable is four inches to short because the connectors are in a different place.

Upgrading your Network

DIY-Computer-Repair can help!

Considerations for upgrading network capability - Speed, more computers, security.

Speed, **if your computer is under five years old it and it has a network card or embedded network capability the chances are it is 100 MBPS.** If you know that your card is a 10 MBPS card then it is time to upgrade. Upgrading to the Gigabit (1000 MBPS) card with out having a gigabit network is a waste of your money unless you are upgrading all of your network.

A word here about Cable and DSL modems and internet access: the maximum speed currently offered for cable or DSL users is 5 **MegaBit**. This is not **MEGA BYTE. 5** *megabit,* divide your current speed by 8, this will give you the current speed you can transfer data to and from your ISP. I have 3 **MegaBit** DSL, I can only transfer at *384 KiloBytes* per second. I think the reason the cable and phone companies advertise their connection speed at MegaBit speeds is to fool us. Wow 3 meg!! or 5 meg!! *In reality it is KiloBytes.*

If you have a network in your home or small business with more than three computers you should consider the network cards installed. Are they 10 or 100 MBPS. Do you transfer documents back and forth between the computers? Is it slow? If it is you may want to consider the overall network speed. If all the computers have 100 MBPS network cards it isn't the network cards it may be the hub or the length of the cabling from the computer to the hub or the hub or hardware configurations. If your hub is fairly new and has 100 MBS Full Duplex (it transmits and receives at the same time) and is set for 100/full then you may be having cabling problems. *It is beyond the scope of this document to trouble shoot network hardware and cabling problems.* If on the other hand you have a very old network and mix of network cards (10, 100, 1000 MBPS) and an old hub then you should upgrade to the hub and cards to the same speed.

Adding more computers to a network will increase the demand on the network components. You may want to add a hub in between your current hub and the furthest computer, you may also want to consider a powered hub not a little non powered workstation hub. **A powered hub will boost the signal which will degrade after a certain distance from the first hub.** *Network topology is beyond the scope of this document.*

Gigabit cards - **this is the latest and greatest from the makers of network products.** These cards have backward capability to 10 MBS. If you are buying new you may want to consider the Gigabit if cost is not an determining factor, later on the cost will go down and you can upgrade all the computers and your hub(s) to gigabit.

Security - In this day and age security is on everyone's mind. How do you secure your network from hackers/thieves/criminals? One way is to put a firewall between your network and them. Another is to have a server that requires a user ID and password to access the network and the computers.

Upgrading your Power Supply

DIY-Computer-Repair can help!

Power supply upgrading -

Power supply considerations - How do you know when you have exceeded the capacity of your power supply? Well one way is when you install a new component and the system will not power up or when you power the computer up and then it shuts down, or you work for about fifteen - twenty minutes and it shuts down. Some main boards have a **Thirmistor** that will shut the computer down when it reaches a certain operating temperature, this keeps the excessive heat from damaging the main board. A over loaded power supply will create a lot of extra heat.

Your stock computer came with a power supply rated by the manufacture to power all the installed devices and one or two more devices. If you have a clone or custom built computer chances are the assembler only put in the minimum power supply to sell the computer cheaper.

So you want to add a CD/DVD burner, and you want to add another hard drive to store all those new digital movies you made with your new digital camera. Oh! yea you have a new Video card and it has it's own processor, you noticed it has a fan on it, plus it has 512 meg of ram. Your little 200 watt power supply is going to blow a fuse - literately. It does not have enough amperage to create the 350 watts you need to power all the new components you are adding.

Back in the day, components came with a wattage rating label either on the device or the package. Since the advent of the "Green" machine these have since gone to the wayside. With out going to the manufacture and researching each component you add to you computer you can only guess at what the wattage is. One way around this is my rule of thumb - Hard drive and CD ROM's will require 25 watts each, your main board and processor will take 50 watts, your video card will take 25 and may go as high as 100, your sound card will take 25 and it may also go as high as 100. Each fan will take 25 watts. It is adding up. So you figure out how many devices you have, add it up and bingo, they don't make a power supply that big!! Just kidding. My main computer has a 400 watt power supply and it has not had any problems. All ways go higher, never lower.

The other thing to consider when looking for a new power supply are the

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dimensions of a higher wattage power supply, make sure it will fit into the bay that the old power supply is in.

Upgrading your Processor

DIY-Computer-Repair can help!

Processor upgrades.

The main reason for upgrading your processor **only is for speed.** Make your computer process data faster, this is a top down upgrade. Every day processing will go faster, but mainly it is a new program that causes you to realize your system isn't as fast as it used to be. **It has not changed,** *the program is demanding more of the processor than it was designed for.*

Considerations - You need to know what processor you have in your system, what speed it is, and what type of socket is on the main board.

If your computer didn't come with a guide that gives you specifications on your system you will have to do some research. You can find out a lot of this information with a tool built into the Microsoft OS, by using Computer Management, under Devices click on the Processors to see what processor is installed. Your can also use the System Info Tool in the Accessories but you will have to decode Microsoft's description.

Now you know the processor version and speed you have to find out what type of socket the processor is in on the main board. *Your processor will only fit one type of socket,* if you have a Pentium III processor, Intel came out with what they thought would be a solution to the main board socket problem. Every new processor has more "pins" because each generation has more functionality than the last. This functionality has to have a way to get to the main board with more "pins". Intel introduce a way to keep the amount of pin changes to a minimum with what is know as a *"Slot A"* socket. This was a good idea until some major manufactures abused the idea by demanding Intel make different types of Slot A cartridges. This increased Intel's manufacturing costs so Intel discontinued the process and went back to the old ZIF socket. These sockets are numbered, each revision of processors have a different socket number.

Intel makes different speeds of the same processor, by having the information of your current processor you may be able to upgrade your system by a large margin.

One thing you have to take into consideration that you can not move from a

Pentium III to a Pentium IV or from a Pentium IV to a Dual Core with out changing the mother board.

Upgrading your Storage

DIY-Computer-Repair can help!

Storage - Hard drives, CD/DVD drives, Flash or Pen drives, and Tapes.

Hard drives are one of the greatest bargains to day, the most bang for your buck.

Considerations - What type of drive? What capacity, How many?

Hard drives -

Types: Current drive types are [IDE](#) (ATA) or [SATA](#) (Serial ATA) you need to know what type you need before you buy. If you have an older computer more than likely it has a IDE controller, newer computers are coming with the SATA1 or SATA2 controllers embedded along with the IDE for CD/DVD drives (back ward compatibility).

If you have a IDE and want to purchase that 300 gig SATA drive you will need a couple of things before you can make it run. You will need a [SATA controller](#), some manufactures are including the controller with their drives, some are not. You will also need a **power cable converter**.

As with other upgrades what do you want you new drive to do? Is it for increased storage for data and programs? Is it for your OS, will it be the Boot drive?

If you are upgrading for just storage, then go for the SATA and the biggest you can afford. I have Doom 3, Half Life 2, these programs come on DVD's and they are compressed files, in addition Half Life 2 goes out to the internet and down loads updates every time I play the game (well it tries, I don't let it). The reason I put these facts in is that my 20 gig hard drive was to full to load these two games, my choices were delete something or upgrade. **Upgrade** was the choice.

I**f you are upgrading for the OS you may want to consider** the biggest you can afford, also you will have to stay with the controller embedded in your main board, I have not seen a bootable SATA add-on controller at this time.

[**CD and DVD**](#) **-**

CD/DVD - **All DVD drives will read the CD format so why buy a CD Drive?** If you are replacing a CD with a DVD consider buying a [Writeable DVD](), the latest Dual Layer (DL) DVD Burner costs less than a regular CD drive in today's market! A DL DVD that will create DVD movies, 8.7 gig of data storage will also read and write cd's! With rewriteable cd or dvd you can use this device for your backup, if you back up your data selectively.

Flash memory devices -

The wonder of technology - [Flash drives (or pen drives)]() are the latest and greatest from the memory innovators and manufactures. These devices store data on a chip that retains the data when the power is removed. You can get these devices in different capacities. The only draw back I can see with a flash drive is that they are very small and can be misplaced, this could be a security risk if you put personal data on one.

Tape -

Adding a tape drive to do backup of your data is a wise choice. With the latest hard drives moving towards 500 gig you wonder if you can afford a tape drive that will back up all that data in a timely manner. In a word: No. If you selectively backup data only you can get by with a fairly cheap drive with a 10 to 30 gig capacity... (fairly cheap means how important is your data?) After considering your options you may want to use a DVD to back up your data.

Hard Drive Mechanic
[Hard Drive Problems? We can Help!]()

Upgrading your USB

DIY-Computer-Repair can help!

Universal Serial Bus

Considerations - Not much these devices are fairly new. Most of the devices you purchase today are of the 2.0 version.

If your computer is three or more years old then you may have **version a 1.1 controller**. You will know if you have version 1.1 when you connect a 2.0 device because you will get this error from the device manager:

"This device can perform faster if you connect it to a Hi-Speed USB 2.0 Port"

If this is the case you can purchase a card to **upgrade** to 2.0.

If you have version 2.0 and need more ports, a usb hub would be easier and cheaper, another reason for using a usb hub is if you purchase a powered hub some devices operate better. I have a couple of external usb hard drives (small portable 20 and 40 gig drives from laptops) sometimes the computer will not recognize the device, connect to a powered hub, no problems.

Information

DIY-Computer-Repair can help!

Build a custom pc!

Information makes the world go 'round. That is why you are reading these pages. You seek an answer to a problem or question.

I have compiled some of the information I have gleaned over the last twenty years or so and present it to you.

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Information for Audio devices
Information about Cases
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Reviews!

Hardware Reviews

Software Reviews

My other pages of interest:

Trouble shooting!

Make a bootable floppy, cd, or USB Pen/Flash drive

Backup your data!

Make an image of your hard drive for recovery purposes!

System Manager tutorial

Web Site related information

Directory Submission Info and Free Directory listing!

Web Site Tools

For printers try this link:
Compatible Ink and Toner Cartridges. Visit phoenixtoners.com

Having a problem? I have answered technical questions at AllExperts, if you are having a problem check out the answers there.

Audio and sound cards

DIY-Computer-Repair can help!

Sound, can you hear me now? Ah, yes we have to have sound, music, bang, boom.

I like sound cards, Doom! was never the same when my Creative Labs
sound card died.

The quality of the sound card and the speakers make all the difference.
Consider the card and speaker setup as your stereo for your computer. If you use it for
business, gaming, or music the quality that you install is the quality you will get out. I
said my sound card died, it did, it could have been from heat (big killer of components)
or over driving it. If you don't know about Doom!, it is a game that came out in the late
'80's. Tons of monsters and lots of noise, loud noise. Some of the noise would over drive
a high quality speaker, and the higher the volume the more power, the more power the
more heat...........

I haven't had much luck with the built in sound devices on main boards, could be that the
games I play have too much boom, bang? So I have a separate card for sound and high
quality speakers that rival what the kids put in thier cars these days.

Sound cards can also be used to record sound or communicate with other people on the
WWW. This gives you the option of live chat, or free phone calls (check out VPN). Lets
say you have "Go to Meeting" or "Microsoft Net meeting" if you have a crappy sound
card and headset the people you are talking to may misconstrue what you are saying if
they can hear you at all.

The only problem with sound is quality equals money, you can scrimp on
some components but sound is not one.

You will need speakers for normal day to day programs, games, and
music. If you do meetings or chat then you will need a good to high
quality headset with microphone, I don't recommend the desk
microphones because they don't have nose canceling qualities that the head sets do.

CPU: Central Processing Unit or Processor

DIY-Computer-Repair can help!

With out a processor you would not have a computer!

We have come a long way since the Commodore 64, Atari 400, T I 99, and the Tandy. These were primary game systems, most used cartages for the games. I do remember coding a word processor and a spread sheet program on my Atari for my college classes, had to save it to a cassette tape recorder.

These all used a 8 bit processor, most used one known as the 6502 processor.

When Intel introduced the 16 bit 8088/8086 processor in 1981 the PC revolution was on! The IBM PC was very expensive, so the primary market was business. An IBM PC cost as much as a new car!

With innovation comes imitation. A few short years after the IBM PC was introduced the makers of circuit boards realized they could create a "clone" of the IBM PC main board.

Processor speed and computing capacity doubles with each new type of processor.

Take the original processors, they were 4 bit, you could get them in a calculator in the '70's.

Then in the late '70's Motorola and Intel introduced the 8 bit.

1981 Intel introduced the 8086/8088, Motorola the 6800, these were 16 bit processors . The Math Coprocessor is a separate chip

1983/84 Intel introduces the 80286, an increase in computing power and the introduction of the Math Coprocessor in the same package as the processor, with a leap in clock speed of the processor.

1987 Intel introduces the 80386, the first 32 bit processor. The increase in speed is incredible, real time processing.

1989: Intel486™, a upgrade to the 80386, increase in speed and computing power.

1993: Intel introduces the Pentium® Processor, this would have been the 80586 but a court order stopped the chain, a number can not be trade marked. (The new name of Pentium continues today.) A quantum leap in speed and computing power.

1997: Intel introduces the Pentium® II Processor another increase in speed and computing power. Approaching 1 gig hertz clock speed.

1999: Intel introduces the Pentium® III Processor, increase in clock speeds over 1 GHz (gig hertz)

2000: Intel introduces the Pentium® 4 Processor clock speed over 2 GHz.

2001: Intel introduces the Itanium® Processor, first in a family of 64-bit products from Intel, primarily for Servers.

2003: Intel introduces the Pentium® M Processor, primarily used in mobile technology.

2006: Intel introduces the [Core™2 Duo processor](), 40% faster than the Pentium 4, uses 40% less power.

Wow..........

Computer cases

DIY-Computer-Repair can help!

Cases come in all sizes and shapes from the small foot print on the desk to the convertible mini tower to the full tower case.

The case houses all the components of the computer, motherboard (or main board) power supply, floppy drive (almost obsolete!), hard drive(s), CD ROM or DVD ROM, sound card, video, and network card. Some computers have other specialty cards also.

A properly designed case will have adequate cooling as part of the design, it may come from the factory with extra fans all ready installed or have specific places to add more fans.

The case will have three main sections:

1) The motherboard bay

2) The power supply bay

3) The drive bay

If you are considering upgrading or building your own computer consider the function of the computer. Research the components you want to have in the computer, there is nothing worse than buying a case and finding out that the "dream" main board you have bought will not fit.

Computer Components

DIY-Computer-Repair can help!

Here are the parts you will need to build a custom pc.

Here is a pictorial view of the components that make up your computer:

Main components -

| Case | Motherboard | Memory | Processor |

| Processor Cooling Fan | Power Supply | Hard Drive | Floppy Drive |

CD or DVD ROM   Keyboard and Mouse Video Card Sound Card

57

Network Card   **External Hard Drive**

Accessories -

Here are some of the accessories that you can add to your computer to make it more
flexible, secure, or protect it -

Speakers   **Head Set**   **Modem**   **USB Hub**

Joy Stick   **Wireless Router/Firewall**   **Power Strip/Surge Protector**

USB Flash Drive   **Web Cam**   **Tape Drive**

Definitions / Glossary

DIY-Computer-Repair can help!

A

Algorithm - a programming technique for gaining a desired result by manipulating data.

AGP - Accelerated Graphics Port: Allows for acceleration of 3D computer graphics, this means that the graphics are read from the system ram (memory) by the adapter instead of being processed through the system processor. Thus speeding up the display of 3D graphics.

B

BIG -Built In Garage. When the "Clone" revolution was at it's peek some computer companies were housed in the owners garage. A lot of the sole proprietorship companies (i.e. startup companies) start in garages or spare bedrooms. BIG Computers.

BIOS - Basic Input Output System the underling program that controls the input and output of the physical devices connected to the computer. A embedded program that can not be changed.

Binary - Base two digit numbering system. (two digits zero and one, off or on, true or false, Computers use the binary system to manipulate data)

Bit - Basic building block of the computer, one binary digit, one storage location, can only be zero or one.

Boot - The process of starting up the computer, loading the BIOS, the POST process, and starting the OS.

Byte - Eight bits, binary number of bits that are the building blocks of programming for computers. Most computer components are measured in BYTEs, some confuse the measurement with BITs. Such measurements reduce the measurement by a factor of EIGHT. KiloBYTE. MegaBYTE, GigaBYTE.

C

Clone - Computers that had the IBM PC style case and a compatible main board and were cheaper than the IBM PC by thousands of dollars.

CD-ROM - Compact Disk - Read Only Memory, CD's became available for music in the 1980's, early in the 1990's CD ROM Drives became available for the computer market. Writeable CD's with the correct format can be used in Audio CD players, or you can store

up to 800 meg of data on one disk. Also comes in Re-Writeable format.

D

Deframentation - The process of taking all the parts of a file and writing them to contagious blocks or sectors of a hard drive.

DIMM - Dual Inline Memory Module, 168 or 184 pin memory module

DDR - Double Data Rate, 240 pin memory Module

Disk - There are three types of disks, Floppy, Hard, and CD ROM.

DVD - Digital Versatile Disc, same format and size as the CD-ROM with a higher capacity. Writeable DVD's created on a computer have the capacity to be used in regular DVD players. Data storage on DVD's can be either 4.7 Gig or 8.4 Gig with the Dual Layer DVD.

Decimal - Base 10 numeric system, how humans count.

E

EPROM or EEPROM - Electronically Programmable Read Only Memory. Some devices have a Read Only Memory chip for programming the functions of the device. This memory is non-volatile, it can not be erased. EPROM's are chips that can be erased and reprogrammed. EEPROM's can be erased electronically, you system bios is a EEPROM for example.

ESD - Electro Magnetic Discharge, static electricity that builds up naturally by movement. Has catastrophic effects on electronic components when discharged. Grounding will dissipate the static electric with out damage to components.

Encryption - A process that will scramble a word, document, or program. Making it unreadable by normal processes, such as a word processor or text editor. Encrypting takes a special program that uses two 'keys' created by the person requiring the encryption. The 'keys' are called a 'public key' and a 'private key' the strength of the encrypted file or word depends on how 'strong' the algorithm is that creates the 'key pair'. Once the object. file, word, or program) is encrypted it can only be decrypted by with the key pair in unison.

F

Floppy Disk - A non-ridged disk made out of very thin Mylar, the term floppy came from the disks in the early 1970's, these disks were 8 inch in a thin plastic sleeve, when you picked up one it had a tendency to bend, or flop around. Newer

disks come in a more ridged plastic case but are still bendable to a certain degree before they break.

Format - Process of setting up a volume to store data, a raw partition needs markers placed on the physical hard drive platters for programs to store data.

Fragmentation - Fragmentation is defined as the fragmenting of a file when it is written to a device. This happens on hard drives when the capacity of the drive does not accommodate the complete file in contiguous (one after another) blocks.

G

Gig - One billion. (close enough for us, unless you are interested in converting Hexadecimal to Decimal)

GHz - Gig Hertz the frequency of the clock speed measured in Gigs (hexadecimal)

H

Hard Drive - Term coined back in the 1980's by IBM when they introduced the first drive that did not have removable media (i.e. a floppy disk). The reason for the name was the original R&D of the device was code named "Winchester" to throw off the competition. The platters are ridged and made out of aluminum with a thin coating of iron metal oxide.

Hertz - The time it takes a certain type of sine ware to complete 360 degrees in electronic components.

Hex - Base 16 numeric system (Humans use a base ten numeric system to count, computers use binary to code for programs, it is easier to code if it is converted from binary to hex).

I

 IDE Integrated Drive Electronics. The integration of electronics inside the body of the drive allows for more control over the capacity of the drive. Before IDE all controls were on the outside of the drive, thus limiting the capacity of the format of the platter. When the electronics were moved to circuit boards inside the drive the capacity has increased by a million fold, soon more than a billion fold.

J

Jazz Drive - A small high capacity storage device that uses Mylar film disk in a hard

case. Capacity ranges from 2 meg to 2 gig.

K

Kilo - One thousand, (Kilobyte, actually 1024 if converted from Hex or binary to decimal)

KBS - Kilo Bytes per Second, how fast data is transferred in kilobytes. Or Kilo Bits Per Second (multiply by 8 to get Kilo Bytes per Second).

L –

M

Memory - Two types of memory - non -volatile - read only, or volatile - changeable. Non volatile is a type of write once, once it is written it can not be changed, like a CD or DVD. Volatile memory is memory that can be changed, you write to it, change your mind and erase it, then write to it again. Your Computer ram is writeable memory.

Modem - A device that communicates with another device across a long distance. Dial up modems connect to a phone line, this is a analog signal, the modem converts a digital signal from the computer to analog to send the data and back to digital when it receives data. (Modem transfer speed is measured in KBS).

MBS - Data transfer speed, Mega Bytes per Second. (Network transfer speed is measured in MBS).

N

Non-Volatile - Something that can not be changed with out destroying it.

O

OS - Operating System, high level program that controls the computer, allows for input and output.

Overclocking - A process of making a chip (memory or processor) perform beyond the manufactures specifications from when the device was made. Say you have a processor that is rated at 800 MHz you if change this to 850 MHz the computer may run faster. Overclocking the memory or processor can lead to damage of the component or the main board or both. *Not Recommended.*

P

Partition - Before a raw hard drive can be formatted it has to have physical pointers applied to the hard drive physical disk platters, these are the starting and ending points for the format program to its job.

Port - A term used for any opening that the computer can use to communicate with a external device, program, or data. Computers have connections for external devices, these connections are called ports.

POST - Power On Self Test - Most computer manufactures provide a way to test the computer when it is powered up, checking components for malfunctions, this program is built into a program called BIOS.

Q

R

Ram - Physical Random Access Memory. Ram is a silicon chip that is electronically charged and discharged to retain data.

S

Storage - Physical devices that retain data when power is removed from the device.

SVGA - Super Video Graphics Adapter:: The VGA adapter allowed for memory and a processor to be incorporated on the card. The resolution went from thousands of colors to millions of colors.

T

U

USB - Universal Serial Bus. USB is used for connecting external devices to your computer, it is an upgrade to the serial bus specification allowing for more than one device to connect to the bus at one time..

V

VGA - Video Graphics Adapter: The first video adapters were mono chrome and did not display graphics, characters only. Then came the

CGA, Color Graphics Adapter. This adapter displayed 16 colors then 256 colors. The VGA adapter allowed for memory and a processor to be incorporated on the card. The resolution went from 256 colors to thousand of colors over night.

W

Winchester: The first hard drives were called Winchesters, this was the code name for the development of the small hard drive for PC's by IBM. *(Small is relative, the original IBM hard drive was 5 1/4 inches wide, 7 inches long, and 3 inches high and weighed approximately 9 pounds!)*

X

Y

Z

Zip - A file compression algorithm.

Keyboards and Mice

DIY-Computer-Repair can help!

I am putting Keyboards and Mice on the same page.

These are input devices, what you do to the device is displayed on the monitor.

Keyboards like processors have came a long way since the old IBM PC, from 86 keys to the 101 key and beyond.

The mouse has not changed all that much since introduced in the late 1980's. some came with only two buttons, some with three. Some were controlled by a ball and some were controlled with two led's (Light emitting diodes) and metal mouse pad with dark blue grid over a light blue back ground.

The main changes with the keyboard and mouse are how the connect to the computer.

There is the wired and the wireless.

Wired keyboards and mouse have a cable that connects to the computer main board with what are known as "ports" most cases today have an Icon to distinguish the different ports. Or they can be connected with a "USB" (Universal Serial Bus)

Wireless keyboard and mouse use either RF (Radio Frequency) or IR (Infrared Frequency) to communicate with the computer. (You can't use a wireless device on a aircraft!!)

I am old fashioned, at home I have a wired keyboard and mouse. The laptop for travel has two mice, a wired for on a Airliner and wireless for when I get to my destination, I like the wireless for the laptop, sometimes you don't have a lot of room to spread out.

So if you like to sit back three to five feet from your monitor to type, play games, then the wireless would be a better choice.

Memory

DIY-Computer-Repair can help!

Memory (RAM) is where the program and the data are stored.

The processor has a small amount (gets larger with every new processor) of memory built in, it is called the cache memory. Your programs are very large due to functions, graphics, and overhead built into the compiler used to make the program (long story). For the processor to do it's job it has to have fast access to the program and data that the program manipulates to give you the desired result.

Do you see a lag in some programs but not others? When you open your email it takes a second or so to open up, but when you open a document from your word processor it seems like you could go drink a coke while it loads? The primary cause is memory.

An effect of lower amount of memory you have in your system is when you load a large program, parts of the program have to be set aside (swapped out) to physical storage. If you load two or more programs then more has to be swapped out to physical storage. Only a small part of the program is retained in memory. This causes your system to run slow.

You can have an older processor (say a Pentium III) and one gig of memory the system will be almost as fast as a newer Dual Core system with 256 meg of memory.

Memory comes in different speeds and types. DDR and DIMM are the current types of memory. The newer main boards are going to DDR type of memory because it is faster.

One more thing effects the overall performance of the system in regards to the memory, that is the speed of the memory. This value is fixed to a certain degree by the main board when it is manufactured. Some main boards have built in upgrade paths, in other words the designers know what is being developed and plan this into their products.

So if you want a performance upgrade and don't have or want to spend a lot of money then increasing the memory in your system is best choice

66

Modems - Dial up - Cable - DSL

DIY-Computer-Repair can help!

Modems connect you to the rest of the computing world.

The WWW or World Wide Web. The WWW is just one gigantic network. Some think of it as a mystical place, and it is. In some respects it is like having your own personal shopping mall and wonder land in your home.

There are two main types of modem in use to day.

The dial up modem and the cable/dsl modem.

The dial up uses a phone line, you connect the modem to your computer with one cable and then connect another cable to your phone line. One draw back of a dialup connection to your ISP (Internet Service Provider) is the speed. Speed makes the world go round. Another draw back of a dial up connection is if you have only one phone line, it is blocked while you are using the modem. You also have to turn off the call waiting and call forwarding features while you are using the modem. You could work from home with a dial up if your job did not entail the sending and receiving of large documents. Surfing the net ten years ago on dial up was not as time consuming as it is today because the web pages were not loaded up with graphics, video clips, moving advertisements, and associated junk.

Cable and DSL modems are connected directly to your ISP. Some cable companies use different types (of network topology) to make it work but it basically boils down to you are connected directly to the ISP all the time. You want to surf the net looking for a new computer? You just start up the old one and "go online" you do not have to wait for a dial up connection.

Different types of modems are:

Dial up (Analog - uses the phone line to connect by dialing a phone number, slow)

DSL (Digital - uses the phone line to connect but does not dial a phone number, is fairly fast, you are the only one using the line, your private network connection to the ISP)

Cable (Digital - uses a coax cable to connect, very fast until the number of users exceeds four, this is because the amount of "band width" is divided up amongst you and your neighbors, like a highway, four cars will move along at the speed limit, twenty will cause a traffic jam.

Motherboards or Main boards

DIY-Computer-Repair can help!

A motherboard had a lot of functions.

Ah, my favorite subject. Motherboards or Main boards are the heart of the computer. Where as the CPU is the engine. The term Motherboard came about with the advent of the IBM PC, the memory, processor, and controlling chips were on one board (motherboard), while all input and out put was done by a board that was inserted into a slot. You had one board that had the keyboard, one serial, one parallel, floppy port, and video, it was monochrome (single color, mainly GREEN it was called a daughter board. You could also have a color video board you inserted, a CGA (Color Graphics Adapter) and have 16 or 256 colors (depending on if you wanted a Volkswagen or a Corvette).

Today most Mother Boards have all the components embedded on the board, video, sound, keyboard, mouse, serial, parallel, network adapter, floppy drive (soon to be obsolete), hard drive/CD-ROM controller, and USB. Some manufactures are so short sighted that they do not give you any slots to upgrade with. What you buy is what you get, no upgrading them, the unfortunate thing is they are not any cheaper than one with expansion slots.

If you are considering on upgrading or building your own system consider what you want the computer to do. My main system case is over ten years old, it has seen four mother boards and processors from the 386 to the Pentium 4.

When you make your list for the upgrade list all the components in one column, the function in another, and the cost in another. Then go to the web and research. Check different manufactures for the embedded functions, mouse, keyboard, network, video (if you are not worried about high resolution) and sound. If you are going to reuse your existing case check the dimensions of the new mother board. Make sure that it will fit.

Then check the mother board for upgrades:

CPU: What processor fits the board? Are you just upgrading the mother board and keeping the old cpu you have now? Can you upgrade to a faster cpu later? Can you set the clock speed on it? Also check the type of "slot" or "Zif socket" for your desired processor, your old processor may not work on the new board.

Does it have slots? How many? What type? PCI and APG are on the way out, the newer cards are PCI-Express, they have a different pin out and will not fit older boards. It may be cheaper in the short run to get a board that is out of production that has all the features you need but remember it is a dead end because the technology is moving on.

Check the type of ram that the board uses. Is it DDR or DIMM? Does your application need more to work smother? Ram upgrades are one of the cheapest upgrades you can do to get the most "bang for your buck".

Networking

DIY-Computer-Repair can help!

Networking information

Networks, ummm, welllll. A very large subject, I have six or seven large text books that explain it. I will try to crunch it down to layman's terms.

Networks are different things to different people, it is not an exact science yet. The standards are getting closer to being standard.

With that said the easiest way to explain it is think of the telephones. Everyone has one, at home, at work, in their car, in their pocket or purse.

All these phones are tied together by wires (technically even cell phones), you see them driving down the road, computer networks are the same. For one computer to communicate with another computer they have to have a connection. Networking. Like keyboards and mice they can be wired or wireless.

Wired networks use a network cable to connect. The wire can be in the wall and you plug a connection cable to the jack or it can be on the floor (not to cool, tripping hazard, gives the dog something to chew on).

Wireless uses a Transceiver (Transmitter/Receiver) device to communicate with another computer.

If you have more than two computers then you will need a "hub" this applies to either wired or wireless. You can connect two computers together using what is known as Peer-to-Peer connection, the cable is connected from one computer to the other computer, this requires a special type of cable.

Suppose you have two computers at home, yours and one for the misses or the kids. You also have a cable modem. Now you have your computer connected to the cable modem because it is for your business. The misses wants to be able to surf and get email, what do you do? The cable modem only has one connection and you are using it! You could get a Cat 5 cable long enough to reach from her computer to the modem, stretched across the floor.......

Or you could Network your house! Now how do you do that in less than 15 million words and $200?

What type of network? Wired or wireless?

Networking page 2

DIY-Computer-Repair can help!

Easy: Wireless

Wireless networking is the easiest way to network a house that does not have network capability built in. (The house is old, or the builder didn't have the foresight to network it). With wireless you don't have to punch holes in the wall, crawl the attic and pull cable or hire some one to do it. (you can have it done, the phone company that put in my DSL pulled two cables for free and charged $50 for each additional cable).

Lets assume you want to go fairly cheap, wireless. There are a couple of products that you can buy a workgroup hub and one or two network cards as a set, from the same manufacture, buying a set means the hub and network cards are designed to work together.

First lets talk about the hub. What kind is best? As with any product there are a plethora of deferent makes and types, depends on the application. Most home users would chose a wireless workgroup hub, you could use a wireless cable modem also. Lets go with the wireless workgroup hub. Most of the newer routers have a built in firewall (more on that in **Routers**) this gives you another layer of protection from the hackers and thieves. Most hubs will come with a setup program to configure the hub's security, connect channel, and connect speed. The main thing to consider here is how complex you make your security, the higher the complexity the less chance of someone hacking your signal. (DO remember to write down your password and name of your network!)

Once you have your hub setup you are ready to setup the misses computer. Some wireless network cards need to have the software/drivers installed before you install the card into the system. Read the directions. Now you need the password and network name that you setup the hub with. When you complete the setup, keep the password in a safe place, you will need it again, trust me on this one.

One last thing on networks, now that you are connected to the WWW please insure your computer is user and password protected. The more complex you make your user id and password the less chance of being hacked.

Networking - Considerations

DIY-Computer-Repair can help!

Considerations for wired or wireless netwoking:

Wired – more secure, lower maintenance and setup, initial cost is high.

Wireless – less secure, higher maintenance and setup, initial cost is lower

Physical Security -
Wired networks have the highest security because for someone to access your network they have to have physical access to the network; they have to be present in your premises to get access to the network. Very visible to you and/or your employees.

Wireless networks work on a Radio Frequency, there for anyone with the knowledge and some equipment (not really sophisticated spy type stuff either) can tap into your network's radio frequency. Now connecting to your network is a deferent problem, but they can see your network with a laptop and a wireless network card.

Software Security -
There are different layers of security that software can provide for your network.

Local level security starts at the workstation.

- Setting up a local user id and password is one way, low security.
- Using a Secure Card for access to the local workstation, medium security.
- Having a local domain with the security that a domain controller provides is the better security.
- Using both the Secure Card reader and domain log on is the highest security.
- There is only one step above this and that is to encrypt the workstation hard drive.

Local level security for your network.

- Setting up a local network with a domain will provide you with medium to high Security.
- To gain access to a local workstation a user must be authenticated by the domain controller.
- Authentication is a user id created and maintained by the domain controller and a password.
- To increase security on a domain various things can be done, such as enforcing password complexity, encrypting the password, insuring the password is changed at a given frequency, and lock out of the user id after a certain number of attempts that have failed..

Networking - connectivity

DIY-Computer-Repair can help!

Types of network connectivity –

Wired networks require less maintenance because you are using physical connections to move your data from point to point. You do not have to do any configuration or upgrading of the physical connections once it is installed.

The wiring should be good for over ten years once it is in place. If you use high quality wiring in your installation it could last as long as twenty years, one thing to consider is that any wiring that exits the living/work area, i.e. into the attic or exterior walls it is subject to the extremes of the environment, high and low temperature changes of the seasons.

Wired networks are expensive because the wire has to be "pulled" throughout the building structure along with installing the "node" wall plates for the connection to the computer, and has to have a panel where all the wires are gathered in one place then connected to the switch or hub which is in turn connected to the router.

Wireless networks have a higher requirement for software maintenance but do not have the expense of wired networks.

With a wireless network you can easily move from one place to another with out worrying about the cost of additional network components.

You can work from anywhere you can connect to the network. The draw backs of a wireless networks are security and distance. Both of these limitations can be overcome with some extra work and equipment.

When you set up your wireless network ensure you are using the highest encryption available, use the most complex password and encryption algorithm.

If you need to have your wireless network extend past the normal range that the wireless switch provides you can add on pieces of equipment that will boost the signal typically to twice the normal range of about thirty feet.

Some of the newer wireless routers and access points have the range booster already built in thus saving the expense of buying the range booster equipment.

Range or length limitations -

Both types of networks wired or wireless have a range or length limitations that may be over come by using hardware to extend the range of the RF signal or length of the wire.

With wireless networks you can add a range booster.

With wired networks you can add a switch to boost the signal after approximately 100 feet.

Networking - network signals

DIY-Computer-Repair can help!

With both types of network your signal will degrade after a certain distance.

With wired networks this is due to the strength of the signal that is sent down the wire, it will lose its strength the farther it travels, due to resistance in the wire.

With wireless networks your limitations come from the strength of the radio frequency that the transmitter puts out. The signal will have a tendency to bounce off of objects (walls, windows, or any flat surface) and will be impeded by walls, furniture, or glass.

This interference will cause the signal to degrade to a point where the connection is lost. Boosting the signal for either network will increase the connectivity.

Decision making –

Wired or Wireless?

These factors in deciding on wired or wireless should be considered.

Security - In this day and age, ID and personal information theft is at an all time high. You should consider security as your number one priority. Loss of data can be devastating.

Cost – New or small business just making it may have to consider the cost of wiring a building to accommodate a new workstation when adding new employees.

Convenience – Sometimes the new or additional device needs to be in a certain or central area.

After weighing all the considerations you will be better equipped to make the "right" decision on installing or adding to your network.

Networking - External security - Firewall

DIY-Computer-Repair can help!

External security for your network.

To secure your network from invasion you need to setup a defense. This defense can be hardware, software, or both. The main player in this defense is called a firewall. You can get a firewall either in your hardware, such as programmed into a router, or with software, such as a program. Either or both will monitor traffic from outside your network that is inbound and traffic that is inside your network that is outbound. Your highest security lies in using both the hardware and the software. I recommend both; the hardware firewall is in non volatile memory and can not be hacked. The software is on your side of the hardware and is less venerable to a hacker. The part of the firewall that does the monitoring is called a rule. You or your system administrator will create the rules that allow only certain types of traffic through your firewall.

Example:
Let's say you have a business and you have five employees, one day you get a call from you ISP (Internet Service Provider) that someone from your local network has been doing something that the ISP prohibits. You could fire everyone, or you could ask the ISP what port the offending service is using to access the Internet. With the port number you can write or create a rule that will turn the port off and not allow any traffic inbound or outbound. If you want to know who is the employee that is putting your business at risk you can use the same rule to track the ip address of the offending computer.

Hardware Security -
For hardware security you can start with your workstations and or servers. Items that increase your security included but are not limited to:

- Secure Card Logon
- Encrypting the hard drives in the computer system
- Requiring user id and password to access the system BIOS and hardware.

For your network you can start with your hubs or switches.

- Require user id and password to modify parameters.

Use of a router that has the firewall as part of the non volatile memory that incorporates NAT (Network Access Translation) rules to increase the security of your connection to the Internet.

Physical security -

Securing all devices behind locked doors at all times, controlling access to the devices is a must. Allow only authorized personnel to access the devices. This will preclude an intruder from accessing the device or someone with out the required knowledge or security clearance from changing the configuration of your prime defense against intrusion or theft of your data.

Power Supply

DIY-Computer-Repair can help!

What is a power supply?

The power supply converts (ps) household current from 115 voltage to four DC voltages. They are +12, -12, +5, and -5 volts. Now you ask your self why DC and those voltages? (We don't want to talk about the amperage........headache?)

Because the devices and components of a computer work on DC current. It is cheaper to make a DC device than a AC device, DC devices create less heat. DC motors are more efficient than AC motors (there are motors in fans, hard drives, floppy drives, tape drives, and CD ROM drives).

So lets talk about the ps **First and Foremost** *DO NOT* open up a power supply! A defective one is even more dangerous. The ps is made up of capacitors, diodes, resistors, transistors (yes they are still around) and coils.

The main reason I say do not open a ps is the capacitors, capacitors retain power (voltage with amperage) that is their function. A good capacitor can retain the designed capacity for long period of time, depending on the composition and quality of the capacitor it can be years. It does not take very much current to kill you. (incase you are interested: voltage + amperage = current, where voltage is amount, amperage is the pressure, current is the flow)

Modern power supplies are sealed so you don't have to worry about getting shocked if you change one out.

Lets look at a power supply from your point of view:

You go to turn on your computer - nada.

 So you go down the checklist of probable causes:

House power on? check

Power at the receptacle? check (the lamp next to the computer is on right?)

Unplugged and repluged in the power cable to both the receptacle and the computer? Check

Hummmm, no power.

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How do you know if the power supply is bad?

You don't unless you have another computer to swap it out to. So be on the safe side and consider it as defective.

A modern power supply will last the life time of the computer, my main system has the original power supply, it is over 10 years old.

Storage

DIY-Computer-Repair can help!

Make that data storage. Comes in two types: writeable and non-writeable.

Huh?

Ok, consider this - you bought a program that came on a CD-ROM. this is **non-writeable** storage. It was written to at the software publishers factory. Done, can't add or change anything on the CD.

Writeable storage are: Hard drives, Floppies, Tapes, Flash, and Re-Writeable CD/DVDs.

So you have a large choice of devices to save your data to. Most are reliable for a long period of time.

The most non volatile is the CD/DVD. I have some CD's that were created in 1993, they are still readable, the programs are next to useless but I can copy them to a hard drive and they run.

The most common device is the Hard Drive. Hard drives continue to increase in capacity and speed. My first hard drive was 5 meg, it took me almost six months to fill it up.

Next most common is the Floppy drive, the floppy is almost (not quite) obsolete because the Flash memory drive is taking its place. As a matter of fact some manufactures are not installing floppy drives in new systems, you get a CD/DVD rom drive to install software from, if you want a floppy drive you have to purchase it separately and normally it is a USB device.

CD/DVD Rom Drives, these devices have increased in capacity since they were introduced and will continue to increase in capacity as the technology evolves. You can get a read only drive or you can get a read/write drive and make your own CD/DVD's.

Coming up fast is the Flash memory device, also know as pen drives, flash drives, etc. These are very compact and high capacity devices. Very convenient (in a way a security risk) they have a chip that allows the data written to ram and be retained with out power.

Tape devices are still around, although they are not as popular as flash devices, they offer long term high capacity storage. Tapes are good for about four years, the company I worked for had a requirement to retain tapes for 11 years, I had to check those tapes every year, if a tape is not stored properly it will degrade.

Links:

Hard Drive Mechanic
[Hard Drive Problems? We can Help!](#)

Ontrack Data Recovery Software
[Data Recovery Do-it-yourself Software](#)

USB - Universal Serial Bus

DIY-Computer-Repair can help!

Universal Serial Bus -USB

What is it?

An expansion or extension of the Serial bus from the motherboard.

One of the better ideas that has evolved over the years. Introduced in the mid 90's it did not catch on because no one had any use for it. The first devices to actually use the USB were keyboards and mice. Now you can connect external usb CD/DVD Rom drives, external usb hard drives, joy sticks, Web cams, and network cards. More to come believe me.

A extremely convenient device, unfortunately most computers only have one or two ports to connect to. You can "chain" some devices together, some monitors have a input port and a output port, you can plug in your keyboard to the monitor and the mouse in to the keyboard, cuts down on the clutter on the desktop.

If you only have one or two ports you can add ports with an expansion device, a hub, these can have up to eight more ports, I would suggest you get a powered hub if you go more than four ports, add a cd/dvd rom, hard drive, or go further than four feet from the port with your cable .

You can also add an internal expansion device to a desk top computer if you have an empty slot to increase your ports or to bring the ports to the front of the computer for conveyance.

Video

DIY-Computer-Repair can help!

Cards and Monitors

If you can't see, you can't use it. Simple. Video is made up of two components; the video card (or device if embedded) and the monitor. Both work in unison, your monitor has to be able to display what the video card is putting out and the video card must not over drive the monitor.

Video cards come with different specifications: color, resolution, and speed are the main considerations.

Monitors also have different specifications: color and resolution are the main considerations.

So what do these specifications mean?

Resolution: basically resolution is how well your two devices interact to display your graphics. Have you seen a fuzzy photo of some thing? It was out of focus, if you don't have a "focus" for your graphics display you have poor resolution. You can set your display to say 1024 x 786 but every thing looks "grainy" but at 800 x 600 it looks sharp. It is just bigger. This is resolution.

Color is also a factor in resolution, the higher the numbers of colors your card can generate the higher and smoother the resolution.

The last factor in resolution is the "pixel" or "dot pitich" count your display has, a pixel is a spot on the monitor that is extremely small, this number is horizontal by vertical, such as 1024 x 786. That is 1024 horizontal pixels by 786 pixels, to add to the equation is the color factor of each pixel. The higher the horizontal by vertical number the higher the resolution.

Speed comes from..... you guessed it RAM. Although the newer video cards have their own processor, the more RAM you have the less drag on your CPU because after the CPU processes the commands and acts on the data it sends it to the Video card to be displayed. This data has to be stored until it can be sent to the monitor. So where does the lag come in? Two places: the monitor and the CPU. The CPU can't send any more data to be displayed until all of the previous data has been sent to the monitor. This is most noticeable in Games or when you have three or four spreadsheets, three or four word documents and email open at the same time.

Virus

DIY-Computer-Repair can help!

Viruses - Are nasty things.

If you watch TV lately there are these commercials where Mac vs. Intel are shown with the good 'ol Mac is always the good guy. I am here to tell you that Mac's are not all that great. The first virus I came across was on a Mac. As a matter of fact McAfee was originally programming virus detectors and cleaners for the Mac a good year before the IBM PC.

Where did they come from? Some people say that the Israeli secret service created the first destructive program to kill off one of their enemy's defense programs.

Your best defense against a virus, Trojan, key logger, or other destructive programs is to setup a defensive posture around your computer/network

   1) Install a reputable anti **virus program** and keep it up to date. Scan daily.

   2) Be careful when downloading programs from the WWW (internet), scan when the download is complete, better to kill it before it can infect your computer.

   3) Keep your computer Operating System and all programs updated with the free patches that come out periodically.

   4) Have a firewall between you and the WWW. The stronger the better. A **firewall** will keep a key logger or Trojan from calling home to give a hacker your personal data or allow a hacker to use your computer for illegal activities without your knowledge.

Consider this: in 1989 there were less than 3000 known virus signatures for all PC's (Intel and Mac) today there are over 300,000. The hackers have created a virus for any make of processor or operating system, even cell phones and Mac's iPods. Your microwave may be next!!

What is the best way to clean a virus from a Windows system? To get the best results you should clean your system in the 'Safe Mode'. Safe Mode uses the minimum of services and programs. Thus if in Safe Mode you will get all the infected files disinfected that you would not in normal mode because the Operating System will lock certain files from being modified while they are in use.

Before going into 'Safe Mode' have your Anti-Virus, Anti-Trojan, and Anti-Spyware programs loaded on the infected computer. Start the computer and when the splash screen 'Starting Windows' press the F8 key, this will open a startup menu, select

'Safe Mode'. You will need to have either the local administrators user id and password or your ID will have to have local administrative rights to log on.

Once in 'Safe Mode' run your Anti-Virus, Anti-Trojan, and Anti-Spyware programs to clean your computer of all infections.

Links

Anti Virus

Norton AntiVirus   www.symantecstore.com

VirusScan Plus
AntiVirus, Firewall & AntiSpywareEssential PC Protection   us.mcafee.com
AVG Anti-Virus Free Edition   www.grisoft.com

Trojan / Spyware

Spyware Doctor   www.pctools.com

Spy Sweeper   www.webroot.com

How to Index...

DIY-Computer-Repair can help!

Have a problem, got a question, need to know the how to do a task?

No such thing as a stupid question. There is a thing called "I messed up!" or "I can't figure this one out!" been there done that type of thing. It is one thing to learn the hard way it is another to learn from someone else's mistakes. If you are in business for your self two things you can not afford to do: *Mess up, pay someone else to mess up!*

So before you make that fatal mistake and kill off a expensive piece of equipment have a look at these **"How to's.."** there may be some experience here that will **save** you some **time** and **$$$**.

Even though this is an E-Book the index below still have the links to my web site, there may be more up to date information on the web page.

How to..........

Comments	Link (note - link opens in new window!)
Recovery is only as good as the *LAST* backup...	**Backup your Data**
Want a gaming computer? Do It Yourself	**Build a Gaming PC**
Basic Autoexec.bat and Config.sys files for a bootable floppy	**Create Autoexe.bat and Config.sys files**
How to create a bootable floppy	**Create a bootable floppy**
How to create a bootable CD or DVD	**Create a Bootable CD/DVD**
How to make a USB device bootable	**Create a Bootable USB Device**
Backup your hard drive or partition for recovery purposes	**Create an image of your hard drive for restoration**
Creating a Symantec Ghost image tutorial	**Creating a Symantec Ghost image**
Restoring a Symantec Ghost image tutorial	**Restore a Symantec Ghost image**
Need to copy a file, here is how to do it	**Copy or move Files or Folders**
What is a connector anyway?	**Connectors** *Humor*

System running slow? Out of drive space, this will help	**Hard Drive Defragmentation**
Ah, motherboards, where would we be with out our motherboard?	**Motherboard Upgrade - A 'How to...'**
Have a new drive? Need to know how to make it functional?	**Partitioning and formatting a hard drive**
System still slow after defragging the hard drive? These options may help.	**Normal - Performance optimization**
System Environment, Virtual memory and Visual effects, Control where temp files are located	**System Environment - Performance optimization**
Advanced system optimization for services, turn off those unused services, regain memory	**Advanced - Performance optimization**
The hackers/criminals can see you....	**Cable/DSL Router Setup**
Service manager what it is and how to use it	**Service Manager**
Pros and cons on building your own custom gaming pc - you will be surprised at the answer.	**Why build a custom Gaming PC?**
Overclocking - What you should know before you increase the speed of your processor!	**Overclocking - Processor and FSB**
USB and Cat5 network cable crossover cable connection to transfer files.	**USB and Cat5 network cable crossover cable**

Having a problem? I have answered technical questions at AllExperts, if you are having a problem check out the answers there.

Autoexec.bat and config.sys boot file examples

DIY-Computer-Repair can help!

Boot files tell the computer what to do when it starts, loads cd/dvd or usb device drivers for access to those devices in DOS.

Note:
Before you start on your adventure read entire this page, it may save you some work and heartache searching for drivers.

Autoexec.bat and config.sys file examples

To use these examples copy and paste to Notepad. Do not use Word or any other word processing program, the file will not work. Also see the note at the bottom of the page on device drivers.

CD/DVD ROM files:

Autoexec.bat

```
@echo off
cls
MSCDEX.EXE /D:IDECD001 /L:E
```

Config.sys

```
DEVICE=A:\HIMEM.SYS
DOS=HIGH,UMB
DEVICEHIGH=A:\XXXXX.XXX /D:IDECD001
files=30
buffers=30
```

Note:

You will have to find the appropriate driver for your usb or cd/dvd rom drive, I can not supply all the drivers out there because there a literally millions!

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You will also need to find these two files, from your hard drive or search Microsoft for the names:

HIMEM.SYS
MSCDEX.EXE

Add the driver files to the floppy with those above.

Where I have put the **XXXXX.XXX** is where you paste your driver name, be sure to copy the actual driver file to the floppy, do not create any folders (or directories) on the floppy, it will cause a boot time error if the drivers are in a separate folder (or directory).

When you find your drivers there should be a text file called readme or something similar, check for the line that reads DEVICE=A:**XXXXX.XXX** /D:IDECD001, you are looking for the part that reads: /D:xxxxxxxx that will be the drive parameter for MSCDEX.EXE to find the driver when it loads, copy the line and past it after the /D: in both the autoexec.bat and config.sys. Save both files and then copy them with the other files to the floppy. Test the floppy, when you start the system you should be at the a: prompt, it will look like this: a black screen with a A:\ Next you need to test the drivers and insure you can access the cd/dvd or usb drive. The drive will be E: for the cd/dvd or the usb drive, type D: at the prompt, press enter. **Do you have E:\ or an error?** If you have a E:\ then Congratulations! If on the other hand you have an error you need to look at the syntax (how the command is formed) for the cd/dvd or usb driver in both autoexec.bat and config.sys files to insure they are correctly typed.

Now you have access to the computer without going into the installed OS. This opens a new set of opportunities for you.

So you want to build a Custom Gaming PC!

DIY-Computer-Repair can help!

Want to build a Custom Gaming PC, this is the place to find out how to do it!

So you are considering your options, buy or build a custom Gaming PC? *Before you put your hard earned cash out for a custom gaming PC why not investigate the possibilities? Some pros and cons of buy or build?*

I think everyone wants the good news first, but with a major out lay of cash you may want to look at the bad news first so on with the cons:

Cons:
Buy -
You will have to find a reputable computer manufacture/assembler to build a custom Gaming PC. Give them the specifications and then they will tell you how much it will cost.
Most custom computers will not go past the OEM [Original Equipment Manufactures] warranty.
You will have to pay to have the computer assembled and shipped to you.
Build-
You will have to order, assemble, test, and load the software yourself.
Any tech support will have to come from searching the internet to find any information about your problem if the item/device manufacture does not offer support.

Pros:
Buy -
You don't have to order, assemble, test, or load software on the system.
You can call the company you bought it from for tech support. [This may not always be the case!]
Build -
You save the cost of the assembly by doing it yourself.
You know what is installed in the system, you bought each part.
The money you saved on the assembly and shipping can be used to buy higher quality parts or more items/devices than you would if you purchased a custom built pc.
You have a larger choice for your components.

When you build a custom Gaming PC it is easier to upgrade, you know what components are in the system, you wouldn't if you bought a custom computer unless you kept the specifications from when you ordered it, and heck who keeps receipts and manuals any

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way?

So now you can make an intelligent decision and enjoy your new game machine!

What is in a gaming PC that isn't in a normal or business PC?

Well for starters it will have a very high resolution **video card** [*don't for get to match that card with a high resolution monitor!*] with a lot of memory, it will also have the latest MDAC processor. [Most **motherboards** come with embedded video, the embedded video is ok for normal business or home use but it not display the higher resolutions games require and the system performance will suffer].

Your gaming PC must also have a very high quality **sound card** and speakers or head phones for the best gaming experience. [Don't get fooled by the onboard sound on most motherboards, they will not have the quality of a medium priced sound card]

You will also want the fastest **processor** available and the most **ram** you can afford.

You will need a high capacity **hard drive** and a **high speed DVD** [The latest game I have came on two DVD's! Gone are the single CD days, so if you have four newer games they just maxed out your 20 gig hard drive!]

If you are a online gamer you will need a decent network card, most newer motherboards come with that option embedded on the motherboard.

If you have a yearning to fly you will need a joy stick, some players have rudder pedals also. Your best bet is to get USB devices.

And you will need an Operating System, if you are familiar with Linux there are a few games being ported over for it. Other wise XP is still the best bet, publishers are not writing drivers or games for Vista yet, maybe in the next six months to a year.

Sample parts list for you to build a custom Gaming PC:

System	Cost
Cooler Master Centurion RC-534-SKN2-GP No Power Supply Mid-Tower Case (Silver/Black)	$79.99
Antec EarthWatts EA430 430W ATX12V Power Supply	$89.99
Asus P5B Deluxe Core 2 Duo/ P965/ SATA2/ A&2GbE/ ATX Motherboard	$266.99
Intel Core 2 Duo Processor E6400 2.13GHz 1066MHz 2MB LGA775 CPU OEM	$264.99
STT DDR2-800 1GB/64x8 CL4 Memory x 2	$148.98
Thermaltake CL-P0257 Blue Orb II Silent For 945/K8/775 Dual Core CPU Fan	$54.99
Hitachi 320GB 0A33405 ATA133 7200rpm 8MB RoHS Hard Drive	$109.99
SonyNEC AD-7170A-0S 18X Dual Layer DVD+/-RW Drive (Silver)	$49.99
XFX nVidia GeForce 7300GT 512MB 2DVI/HDTV PCI-Express Video Card	$144.99
Creative Labs Sound Blaster X-Fi XtremeGamer Fatal1ty Pro 7.1 24-bit PCI Sound Card	$189.99
Creative I-Trigue 2200 2PC Speaker System (Black/Silver)	$61.99

Microsoft Wireless Optical Desktop 3000 Set (Keyboard + Mouse)	$141.99
Microsoft Windows XP Professional W/SP2B	$209.99
System sub total	**$1,814.86**
Optional Accessories	
Logitech QuickCam Pro 5000 Digital WebCam	$94.99
Samsung 941BW 19 inch WideScreen 4ms DVI LCD Monitor (Black)	$301.99
Symantec Norton AntiVirus 2007	$64.99
Cost of system	**$2,276.83**
Comaprable system custom built	
Voodoo (only comes with AMD processor) - with monitor	$5,530
Alenware - No monitor	$2,683

As you can see to a build a custom Gaming PC is not cheap. How ever you can save your self a lot of money by DIY - the name of the game -

SAVE....

Connectors - connector - hard drive - cd rom - floppy - power supply - motherboard - networking

DIY-Computer-Repair can help!

Why a how to on connectors?

Well connectors come in a plethora of different types and sizes. With the geek out of the way why connectors? Because your device will not work if it is not connected!

So when the engineers at the electronics company design a device they design it in a way that you can not plug the power into the wrong place or plug a floppy controller cable into a hard drive. See where I am going? The designers make the computer repair or replacement **almost fool proof**. I said almost. There are some **people** - I use this term very loosely! - that can plug the wrong cable into the wrong device. I have seen it! Hard drive - cd rom - floppy - power supply - motherboard (lots of connectors here!)- networking they are all different, and have different functions.

Every device has one or more connections, the part where the power cable or data cable connects is termed as a connector. There are only two devices that have the same connector but different functions. Do you know which ones I am taking about?

There are devices that have only one connector, their power is supplied from inside the data cable, these are low voltage devices. Most USB devices are low voltage. Those that require higher voltage or multiple voltages have a separate connection for power. Hard drives, cd/dvd rom, floppy drives, and fans are like this. Now you are wondering why these devices have multiple voltages. "Simple My Dear Watson:" the five volts runs the motor that spins the platters. The twelve volts runs the motor that moves the seeker head back and forth over the platters. Also the twelve volt is supplied in the positive and the negative, didn't know that eh? Why? Well the positive twelve volts causes the seeker head to move in one direction and the negative in the opposite direction. Vola! you can read your data!

Back to the connectors, most connectors are made out of plastic and have metal pins that mate with the opposite pins on the receiving connector. How many connectors have a metal shield? Hint: they are all on the outside of the computer.

Now suppose you had to change out a device but to get to the device you had to remove some other devices, say the cd/dvd rom and floppy drives. As you work your way down to the device you need to change you are disconnecting cables. Did you notice that each cable is made in a certain way? Like the floppy controller cable connector is smaller than the cd/dvd rom controller cable? Or the power supply cable for the cd/dvd rom is different from the floppy drive? **Almost fool proof.**

Ok, got the device out and ready to put it back in. If (and this is a big IF) the device you are replacing is a hard drive did you notice the controller cable connector? I though not, ok I will bail you out this time, the hard drive controller cable connector and the cd/dvd rom controller cable connector are almost exactly the same, (on newer computers that have SATA drives it is different) the EIDE hard drive has enhanced integrated drive electronics, to make it faster. To designate the EIDE from IDE the designers need to come up with a way to make them different but the same, the EIDE will be blue with grey or grey with blue. IDE connectors will be black. Why the different colors? The EIDE has three more wires connected inside the connector, the IDE is short three wires. If you plug the IDE connector into the EIDE drive it will either function erratically or not function at all.

So now you know all there is to know about connectors, right?

Hummm? Well grasshopper which two connectors look exactly alike and can be plugged in wrong?

The main thing about connectors are they are plastic. They will become brittle with age. So if you are disconnecting a device that has been in your computer since it was assembled the connectors should be handled with care. If you break a connector you will have to replace the cable it is connected to, if the connector is on a device you are disconnecting to move and break the connector chances are you will have to by a new device.

Last thing, even though the computer and device manufactures use a lot of common sense in designing their products if it can be connected wrong it will be connected wrong, Murphy's law # 63.

After all this did you figure out which two connectors are are the same physically but have different functions?

Mouse and Keyboard!

How to copy not move Files or Folders

DIY-Computer-Repair can help!

Why copy a file instead of doing a move file?

Move or copy a file? There is a **small catch** to moving a file. **The catch is if the process does not complete the copy it will deleted your file anyway.** It works like this: You right click on the file and select move. Or you right click on the file and drag it to where you want it to go. Then release the mouse button and the OS asks you if you want to Copy or Move the file here? You click on Move. The OS will copy the file into clip board, then delete the original file. Then it pastes the file into the destination folder. If some thing interrupts this operation you have just lost your file! It will be deleted from the clip board because the os thinks it completed the move. Want to know the worst part of this? *You will not find the file in the Recycle Bin either!* There are some file recovery tools that may (*note I said may*) find the file. *My advice? Never move a file! Always copy and paste the file then delete the original.*

So now you need to know the mechanics of the process. Ok it is not complicated but the first couple of times it is tedious.

You can use any of these techniques to copy your files:

Explorer Copy:

Open explorer, go to the source folder, right click on the file you want to copy, go to copy on the menu. Next go to the destination folder and double click on it or click on the 'plus' sign in the left column. In the right column where you want the file right click on the empty white space and select paste. If you don't want or need the original file right click on it and select delete.

My Computer Copy

Let us say you have a folder full of files you want to put in a different place. If the destination is on the same drive the OS will just move the name of the folder to the new destination, it is not really a copy operation. But lets say you want to have the folder on your usb pen drive from you hard drive as a back up. You open the folder above the one you want to move, you also open the destination folder you want to place the copy in. Right click on the folder and select copy (*remember the warning about using Move!)* In the destination folder you right click in the open white space and select paste. To insure you have all your files right click on both the source and destination folders and select properties, they should be the same in amount of sub folders, files and size in bytes.

Search copy

Let us assume you have created a document sometime in the past and can't remember where you saved it. (Happens to the best of us believe me!) But you remember the name of the document or part of the name. You can do a search for your file. Once you have found the file you can either note where it is located and open that folder or you can copy it from the Search window to the destination. To do this you would use the Explorer copy technique.

How to create a Boot Floppy

DIY-Computer-Repair can help!

Boot floppy, what are they? Why do I need at least one if not all?

Boot devices are floppy, cd, usb, or an <u>external hard drive</u> that will start your computer if one of the following things has happened to the internal hard drive:

Failure, corrupt, infected with a virus, OS blue screened.

So there you are, you have an image of the computer hard drive the tech made when he setup your brand new system. Now it is a blank screen and you are wondering how you are going to get the image back on your system and get back to work. Well you could call the geeks and have one come over and do it for you, that should be good for a day's worth of loss productivity and at least $300 for their time and the trip charge.

Or....... you could put on your self. That is why you need a boot device.

See I just saved you at a minimum $300! How?

By helping you get/make/acquire a bootable device.

Note: These procedures will require some research for drivers and some time to accomplish the task.

Types of devices:

<u>Floppy</u>

<u>CD</u>

<u>USB</u>

<u>External hard drive</u>.

Wow! you say that is going to cost me some bucks! Well yes and no.

Yes: you need to access your image that is stored on a CD or a DVD maybe even a external hard drive.

No, this is the cheapest way to go, so lets start at the beginning:

A bootable floppy, you can create a bootable floppy from windows like this (you can also get this information from the windows help program)

To create an MS-DOS startup disk
The MS-DOS startup disk you create will allow you to boot into MS-DOS.

Insert a floppy disk into your computer's floppy drive.
Open My Computer, and then click the floppy disk drive to select it.
On the File menu, point to the name of the floppy drive, and then click Format.
Under Format options, click Create an MS-DOS startup disk.
Click Start.
Important
Creating an MS-DOS startup disk erases all information on the floppy disk.
Notes
To open My Computer, double-click the My Computer icon on the desktop.
The MS-DOS startup disk only allows the system to boot into an MS-DOS prompt. The disk contains no additional tools.

You will need these files on the floppy:
COMMAND.COM
MSCDEX.EXE
HIMEM.SYS
CD/DVD DEVICE DRIVER or USB DRIVER
AUTOEXEC.BAT
CONFIG.SYS

There is a problem with creating a bootable floppy, you still need the DOS drivers for your cd, if your external drive is a usb device you will need those drivers. So you have the drivers, (this is all Greek to me! ... NOT GEEK!) you need to copy them to your floppy, check the space on the floppy, is there enough room plus another fifty kilobytes or so for your custom Autoexec.bat and config.sys files? If not you can delete some of the files, **DO NOT DELETE the COMMAND.COM file**, it is required to start your computer. Test is the word for creating a bootable disk, once you have the disk completed and you have a few minutes or another computer test the disk, can you start the system and be at the command prompt? (you will know when you are there, the screen will be black and it will have in white letters: `A:\>`) You will need to test your cd or dvd drive, put a cd or dvd in the drive. Type E:\ at the prompt, press enter, did you get a `E:\>` or did you get an error saying the drive was not ready. If you got an error you have missed something in the config.sys file. If you get a `E:\>` you have a bootable floppy. Congratulations!

You can find a generic Autoexec.bat and config.sys file on the Autoexec.bat and config.sys page, where the xxxx's are you add your device driver.

To create a bootable cd/dvd or make a USB device bootable go to these pages:

Bootable CD/DVD

Bootable USB device

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Or you could save your self a whole bunch of time by using this program:

ERD Commander or **BartPe**

How to create a Bootable CD or DVD

DIY-Computer-Repair can help!

You have seen them, your installation cd is bootable. So how do you make a cd or a dvd that is bootable?

(Note: read the entire procedure before you start!)

Well you need to have some things besides the blank cd/dvd.
1. A CD or DVD that will write to a blank disk
2. A software program that will create bootable disks
3. A bootable floppy with the files you want to have on the boot section of the CD/DVD

Ok, I have all the materials what next?

Now the files are saved on the floppy. Start your CD/DVD writing program, put your disk in the drive. You may have to use the help file for the software program to find the correct procedure to create your boot CD/DVD. (Because this is a new process for you I would suggest you get a **ReWritable** CD/DVD, if you make a mistake you can erase it and start again!)

This is how Roxio does it.

Under File, select New Project then Bootable Disk, you will need a blank CD/DVD and a bootable floppy.

Insert the cd and floppy.
Select - Bootable Disk, at this point you will chose the type of boot disk type.
Select - Floppy Disk Emulation (1.44 MB),
Select - Generate Image from Floppy
(my version allows you to save the bootimg.bin file for creating a bootable cd in the future.)

The program will read the floppy, the next step is to burn the cd, if you have supporting files you want on the cd you can now add them under the two files that the software has created.

In case I have confused you any files that you add to the cd that are not on the floppy will show up on the drive that the CD/DVD drivers load, it could be C: or D: drive if you have not changed the drive letter designation in the Autoexec.bat file by adding this parameter to the MSCDEX.EXE line: **/L:E** this will make the CD/DVD drive letter E:\.

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Already? Burn it!

Now test it, nothing like making a cd then needing to use it and it has an error!

Or you could use a program like **ERD Commander** or **Bart's PE** and save your self a lot of work and hassle.

How to create a Bootable USB Device

DIY-Computer-Repair can help!

Why Create a Bootable USB Device?

Not all USB devices are created equal. By that I mean not all USB flash, pen drives can be made into a bootable device. The best way to create a bootable USB drive is to use a utility that writes the files to the device. You can not do this to an external USB hard drive, external hard drives take the same procedure that a normal hard drive does.

(To make a hard drive in an external usb enclosure bootable requires you to remove the drive and install it into a computer, this procedure is some what involved and will invalidate a warranty if it is a new device, if you want to do the procedure contact me through my support page.)

I have found a couple of utilities that will make these devices bootable:

HP Drive Key Boot Utility
Lenovo Memory Key Boot Utility

(Be sure to read the readme.txt file for both of these fine programs, I have used the HP program for some time and have not had any problems with the creation of a bootable pen drive)

Now that you have the utility you also need a bootable floppy with the Autoexec.bat and config.sys files. Once you have created the boot device you can copy any other files you may need on to it.

(Note: Check the autoexec.bat and config.sys if you are loading any drivers, the path has to be C:\ because when you use the usb device to boot the computer it is the first drive that the BIOS will see.)

Now you need to test your new bootable device just incase you need to use it, you don't want to rely on something that "may work!"

How to make a bootable usb hard drive

DIY-Computer-Repair can help!

To make a usb hard drive bootable you have two choices.

Note: You have to have an understanding of the boot process and either a bootable floppy or bootable cd.

Choice # 1: If you have a computer that you can disconnect the internal hard drive and boot from a cd or floppy here are the steps:

    1) Disconnect the internal hard drive (power or controller cable will do it)

    2) Connect the usb drive to the computer, start the computer with bootable cd

       (See my page on making a bootable CD)

       or floppy

       (See my page on making a bootable floppy).

    3) Once the system has booted into DOS, using **FDISK** partition the hard drive with one partition, make it a small partition, 2 gig max, ensure it is an active partition (See my page on Formatting a hard drive)

    4) Restart and format the drive, add the files you want to the C: drive.

    5) TEST the drive!

    6) Reconnect the internal drive

Choice # 2: If your system does not allow you to access the USB device with FDISK.

    1) Remove the drive from the external enclosure.

Warning! This will invalidate the warranty on the enclosure if it is sealed!

    2) Disconnect the internal drive in your computer.

    3) Install/Connect the external drive in your computer

    4) Go into BIOS and check for the presence of the external drive.

    5) Start the computer with bootable cd

       (See my page on making a bootable CD)

       or floppy

       (See my page on making a bootable floppy).

    6) Follow the above instructions on FDISK and Format.

    7) TEST the drive!!

    8) Reverse installation procedures to put the drives back into original positions.

I do not take any responsibility for these instructions! I will not warranty any part of these instructions. If you feel these instructions are beyond your capability to

complete safely then check with a local repair shop about the feasibility of them making the drive bootable.

Good luck with your project.

USB and Cat5 Crossover Cables

DIY-Computer-Repair can help!

There are numerous types of cross over cables to transfer files from one computer to another computer with out a network.

Using a USB and Cat5 network cable crossover cable connection to transfer files.

The easiest is a special usb cable that allows you to connect two computers via usb ports. No power required unless your computers are over six feet apart then I recommend a powered usb hub to keep the signal loss low thus not corrupting any files. The cable I have is a older version that uses a network type setup, the newer cables use the familiar Explorer interface and is much easier.

You can also use a Cat5 cable that is wired to be a crossover and use your network cards in the two computers. The setup for this is somewhat involved and requires you either make or buy the crossover cable. You also have to setup the network cards to have the same subnet and mask. **The advantage to the Cat5 network crossover is speed and length of the cable, you can set the speed for both computers to 100/full and have a cable of up to 30 feet.**

USB Crossover cable use:

Plug the cable in both systems, you will have to load drivers for each system to use the cable. Most cables come with drivers. Depending on the cable you have you will connect directly to the other computer or will have to setup a network type of connection. If you have to use the network type setup you have to share the volume, or folder that you want to connect to. Once you have the connection then you can use any file transfer program to move/copy your files, like Explore of a file manager program. To insure you are connected just open My Computer and you will see the new drive(s) from the other computer.

Cat5 Crossover cable use:

First you need to obtain the cable, most electronic stores that have network devices and cables for sale have them, the should be about the same price as a normal Cat5 cable. If you want to know about how the cable works or want to make your own see this web site.

Next you have to setup the NIC's in each computer to the same subnet, normally because you are not connecting to the internet and do not have to worry about being hacked you can use 192.168.1.x. You can change the x to 1 for the first system and 2 for the second system. Then you need to put in the subnet mask which is 255.255.255.0. You can put in the gateway address as 192.168.1.3, it doesn't matter what you use. Windows will balk with out the gateway address, so use it. **For this to work you must set the 'Enable NetBIOS over TCP/IP' option on**
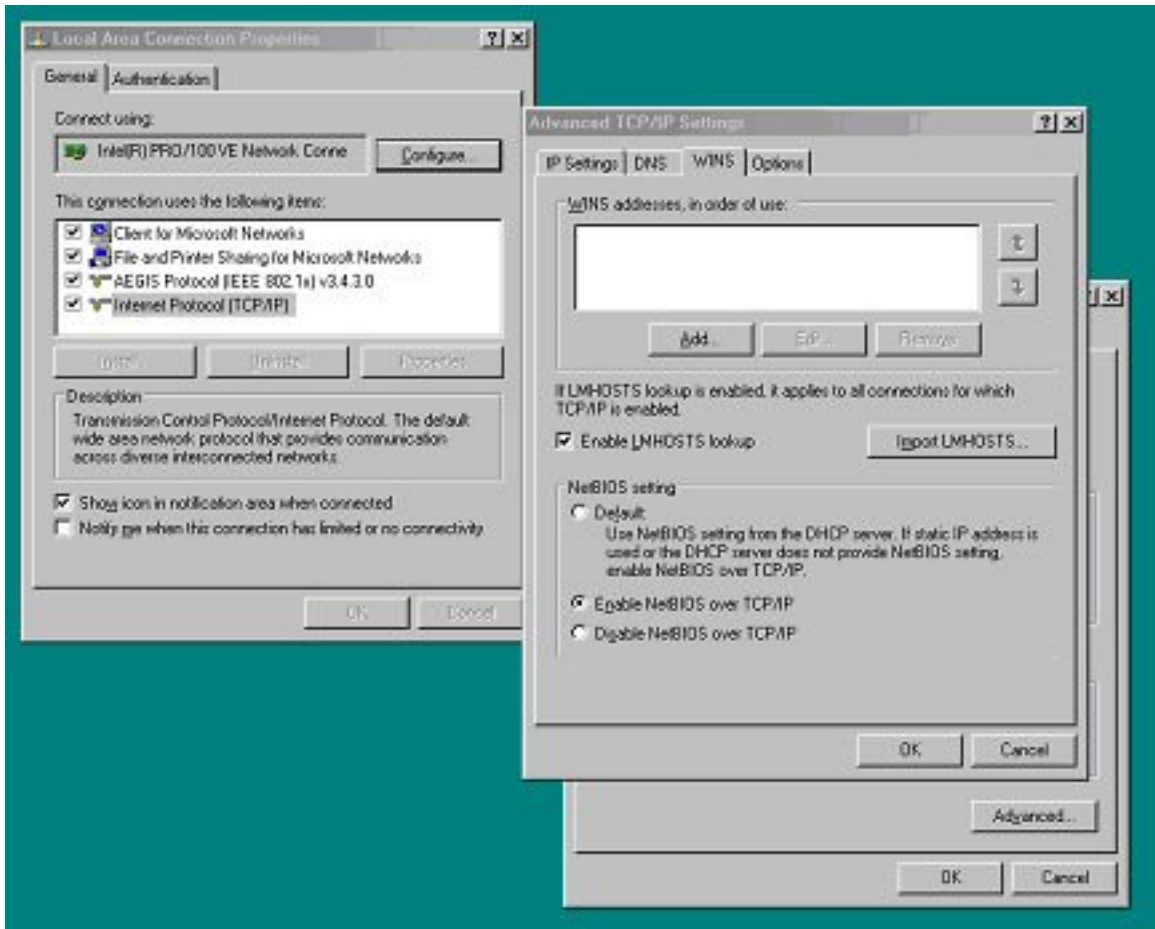
the WINS tab of the TCP/IP Properties Advanced tab. You can designate one of the systems as the DNS controller and the WINS controller with out actually installing the services, I suggest the first computer ip for these address. This will assist when you are trying to connect from one system to the other.

Now connect the cables and do a 'ping' command from each system to the other, you should get a reply, if not then check your parameters. Then try 'ping' command by each systems name, again you should get a reply, if not check your parameters.

Last thing about using the Cat5 crossover cable, security. Because you are using a network connection you will have to setup the security, that is you have to grant permission to one of the systems from the other system. Such as the first system we will

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call 'One' and the second system 'Two'. System One needs to know that system Two is a trusted system. Create a user id on both systems with the same name and password, say the name you use is 'Transfer' or something simple, give that id full rights (Administrator) to both systems. Then on the volume or the folder you want to transfer your files give 'Transfer' full right to folder or volume.

Go to the second system and search for 'One' by name or IP, once you find it right click on the icon, select 'Explore' if you have the security set correctly it should open. Right click on the volume or drive and select 'Map network drive', if a security box opens then use this format for the id: One/Transfer then type in the password you gave the id. It should connect and open a window to the drive/volume. Start your copy process.

If you don't transfer files from one computer to another very often or this is a one time deal then delete the transfer account and the crossover network connection. This will insure someone that doesn't have rights to the computers from gaining access with out your permission.

How to do Hard Disk Defragmentation

DIY-Computer-Repair can help!

Fragmentation? What is it? Why do I care? How do I use hard drive defragmentation?

File fragmentation of your hard drive's file structure will cause poor performance when you start you computer, cause it to react slowly when you try to open a file or application.

It occurs on a daily basis. It will occur anytime you write a file. The amount of fragmentation will depend on how much free space you have on your hard drive. A hard drive that has very little open space will have a higher amount of file fragmentation than say a almost new drive.

When you save a file to your hard drive it is written to what is called **contiguous blocks**, that is block a, block b, block c, and so on. But if your hard drive is low on space then the file system can not always write your file to contagious blocks. This causes the slow down in your performance because the file system has to find empty block to write your file and when you want to open the file it has to go find all the blocks that the file was written to.

So to get the most out of your hard drive you need to defragment your hard drive either on a schedule or when you notice a degrading of performance.

You can use the built in Disk Defragmenter or you can purchase a third party product. For a pc the built in defragmenter program will work just fine. **Depending on the size of the drive and how fragmented it is will determine how long it will take to combine all of your files.** Before you start the defragmentation you should go to the temp folders and delete all the files there, they are useless unless you have a program open and there is a file in the temp folder for the application to use until you save it.

If you are getting the "**Disk Cleanup**" warning you need to delete the temp files before you defrag your hard drive. *(search for "temp" folders, delete all contents.)*

You may want to run the program in the 'Safe Mode', restart your system, press F8 when the Windows startup screen is displayed, select 'Safe Mode' from the menu. You should run your anti-virus and anti-spyware programs before doing the defragment. Empty the temp files!

To start the Disk Defragmenter go to Start/Programs/Accessories/System tools.. **(Note: To get the best defrag of your hard drive close all programs, email, word doc processor, all of them or run it in 'Safe Mode'. You may want to run the program**

after your business day and let it run over night, some times on a really fragmented drive it will take a couple of hours or more to complete the task)

Once it is started select the volume in the top window, then right click and run the analyze volume. Once the analyzation is complete then let the program defrag the volume. You should see a performance boost when you have completed the defrag.

You should defrag all your drives periodically this will preclude performance problems from the file system.

About the time it takes to defragment a drive:

When you run defrag on a system the time for competition depends on:

a) **How big the drive is**, the bigger the drive the longer it will take
b) **How fragmented the drive is**, if the drive is highly fragmented it will take a long time.
c) **How many open programs you have**, open programs will delay the completion of the process. **(see note above!)**

If you have a drive larger than 20 gig and has not been defragged before or it has been a long time since defragging it the process will take a long time, I have seen it run over 24 hours.

Drive imaging, to image or not to image.................

DIY-Computer-Repair can help!

Consider this:

If your computer failed right now do you have a **backup** *of your data? If you do great, if you don't how much will it cost you to recover that data?*

I am not saying to do an image of your computer at the end of each business day. The usefulness of a image of you hard drive is in case of a catastrophic hardware failure, your power supply goes south and takes your hard drive with it. Or your hard drive fails. With an image of the partition(s) that have your data stored on them you can recover faster with less work or heartache. To go along with the image you have to have a comprehensive data back up plan and schedule.

How it works:

Along with your comprehensive data backup program you create an image of your operating system and data partition(s).

Example number one, a personal system:

Lets say you have a brand new computer (***works with an old one too!***), it either comes with the OS installed or your install it. Then you install your programs (with all those nagging key codes, activation codes, anti theft programs, etc....) and you customize your desktop to your liking. Now you have invested at least four hours if not more into just getting the darn thing where you can actually do some work! Ok how much did that cost you? I mean how much is four hours of your business day worth?

With the imaging program you can create a complete image of the hard drive. You can either create an image of the hard drive itself or of each of the partitions on the hard drive (*partition image is recommended because you would have to have the same drive from the same manufacture with the same specifications as the original to recover with a hard drive image*).

So your hard drive has failed, you get the new one, it is installed now what? Well if you had a image of the original hard drive partitions you could put the images on your new hard drive and be back up and running in less than an hour. Once you have the image on the hard drive, you go to your latest backup and restore your data. *Done, looks just like the old one, eh? And as a bonus you don't have to find those key codes, call or contact the program publisher to unlock the activation again, it is all ready installed!*

Example number two a business with multiple systems:

Before I get into the why and how this only works on computers made by the same company and have the same model number, differences between companies and models of computers will cause the image to fail on startup!

Lest say you have a business, you are going to expand or buy new equipment. The local computer store or shop wants $XXX per hour to setup and install all your systems with the OS and all the software you have for each computer. *You will need to check with the program's publisher about licensing your software, if you have a corporate or enterprise license you will not have any problems installing all your software on one computer and creating an image to deploy to all the other computers.*

So to save your self a lot of $$$ you decide to buy Norton Ghost, create an image on one of the new computers. To do this you or the tech will setup one system, load all the software, **Optimize the OS!** Then using ghost create the image. Ok where will you put the image once you decide to do this? The fastest way is to create a separate partition on the image computer and not format it. You will have to either boot the system from dos or use a program like ERD Commander (**see my review of this fine program!**) or **Bart's PE** and then format the partition and create your image there. Once created you can then copy it to a CD or a DVD. This makes the image portable and tamper proof.

Before you begin:

You will need two things before you can create your image:

1) A way to start the computer and not be in the installed OS.

2) A place or storage device for the image.

How do you start the darn thing with out the hard drive? Well there are thee ways to start the system besides using the installed OS. You can use:

A Floppy

A CD

A USB drive

(*See my page on boot devices for more info on the how to boot your system*)

So now you have it started and are ready to create the image, where are you going to store it? You can't use any of the boot devices they are to small, your image(s) may be over 1 gig, the OS partition will be that or more by itself.

You could use the hard drive in the computer if there is enough space to create another partition of say five gig or a little more. You could use an external USB drive, or if you have a second drive in the system use that. Another place could be the second partition if you have two partitions on the hard drive, this will only work for the OS partition.

Note: if you are using the hard drive in the computer you should move the OS image off the second partition before you image it, leaving it on the partition then creating an image will increase the size of the image by the amount of space the OS image occupies, say it is 1.3 gig, then the image you are creating will be the data on the partition plus the OS image of 1.3 gig.

Now you have your images what next? Well you need to store them in a safe place. Look at the size of the images, will they fit on CD's? or maybe a DVD? If you used a external hard drive is it reliable? Do you carry it with you when you travel? Hard drives are extremely reliable but they are vulnerable to shock, electro magnetic discharge, and voltage spikes. They will fail. Put the images on a CD or DVD as soon as possible.

Tutorials for creating and restoring a ghost image:

[Creating a Symantec Ghost image](#)
[Restoring a Symantec Ghost image](#)

Remember:

Your backup is only as good as the last backup! Backup regularly!

How to make an image with Symantec Ghost software

DIY-Computer-Repair can help!

Ghost imaging software will save you hours of work!

On a previous page I told you why you need to make an image of your hard drive. Here I will show you how to do the deed!

Before you start you will need a couple of things:
1) A bootable device
2) A place to store your image, it should be 10 gig or larger
3) The software, Symantec Ghost.

Preliminarily information:
Note: If you build a DOS boot device or if you use a windows boot device such as ERD or Bart's PE. You have two choices when you use Ghost. One is called a DOS command line program - Ghost.exe (16 bit program) and the other is a Windows program called Ghost32.exe (32 bit program). The advantage of **ERD** or **Bart's PE** is that they are 32 bit Preinstalled Environment bootable live windows CD or DVD, you will have a Windows type interface.

Once you have your tools, start the system with the bootable device. Then start the program, when it is running the interface is the same, the difference comes with the options. Ghost being a 16 bit DOS program has to conform to DOS constraints. That being the naming convention: 8.3 which means the name can only be eight characters and the extension can only be three characters. Where as Ghost32 is a 32 bit program and the naming convention is the same as any Windows name, 256 characters and any extension you want. *I do stress that if you do not use .GHO for the extension the program will not restore the image when you need to use it!*

My version of Symantec Ghost software is about four revision old so the interface will look a little different but the functions are the same.

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Start splash screen, this is Ghost32, behind the splash screen is the DOS command line box, If you close the DOS box it will close out the program, leave it open. Click Ok.
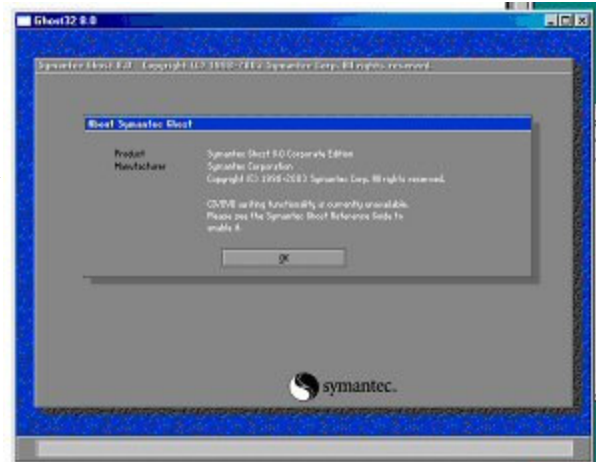
The next screen is the main menu screen. I have opened the menu down to create an image of a partition.

Once you select your image type the program will open up to your hard drives. Be sure to select the correct drive. If you don't know which drive or are unsure use the Storage manager to get the properties of the drive you want to image. Select your dirve

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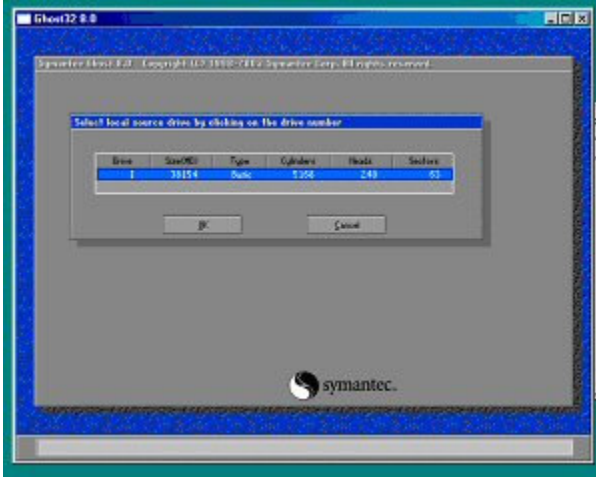
Now you will see all the partitions on the drive, select your partition you are making the image of, here I have selected the C: drive
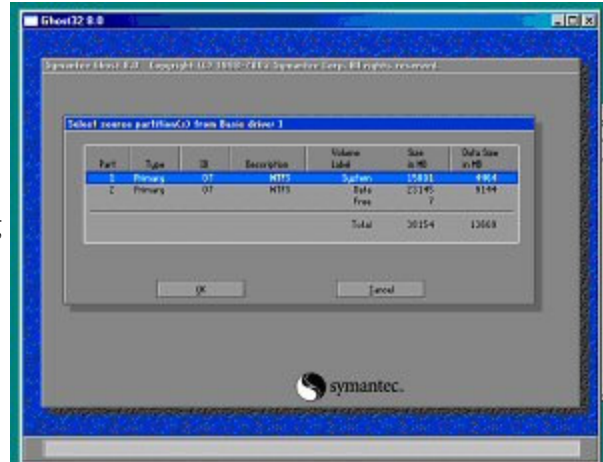
Select your storage drive and then name your image. If you are going to make an image of more than one partition name them by the drive letter. I try to use the date of the image, once you have more than two images it is hard to keep track of the latest one.

Next you need to select how you want the image created, I use **High** compression because of space constraints, you may have very large storage space and want to create the image in the least amount of time, select **Fast**. **No** will not compress the image at all.

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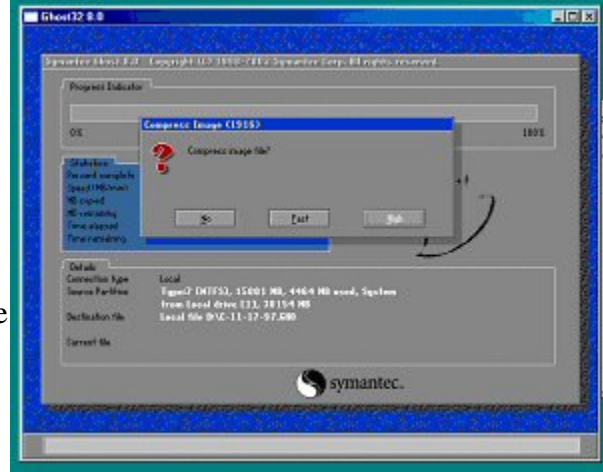
Select yes, the image process will start.
The completion time will depended on a
couple of things: The size of the data on
the partition, the fragmentation of the
partition, and the device you are using to
store the image.
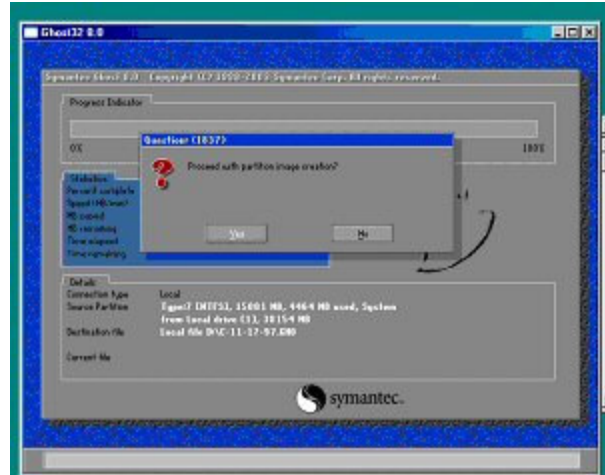
Creating the image, the top bar is an
estimate of completion. The menu will
show you amount of data copied and the
time elapsed

Almost completed

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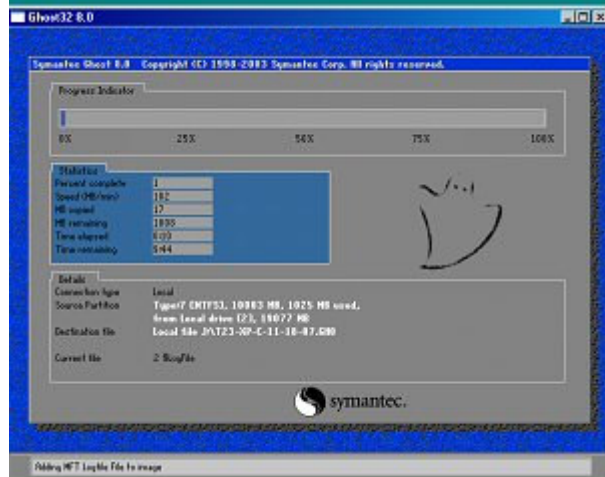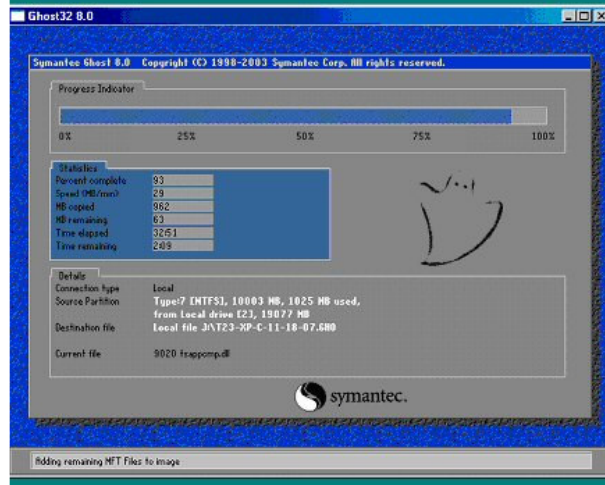
Finished
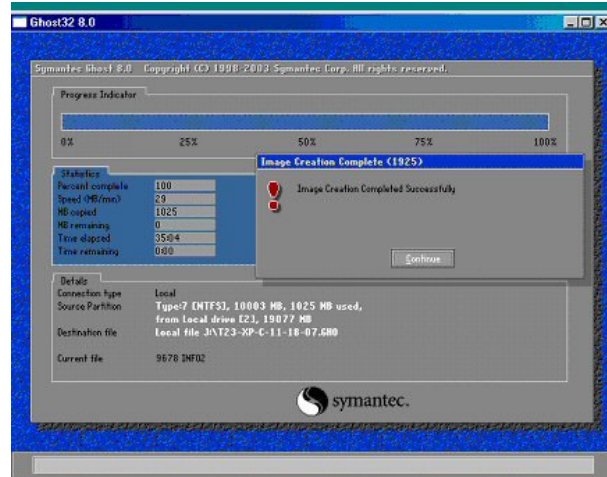
Continue or Restart
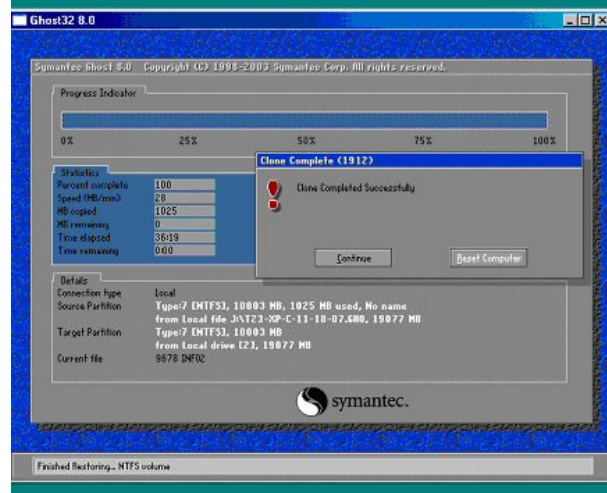
When you complete your image you would do well to check the image by verifying the image. To do this from the menu go to local / check / Image file. This will insure that when you go to restore the image it will restore for you.

Select check / image,
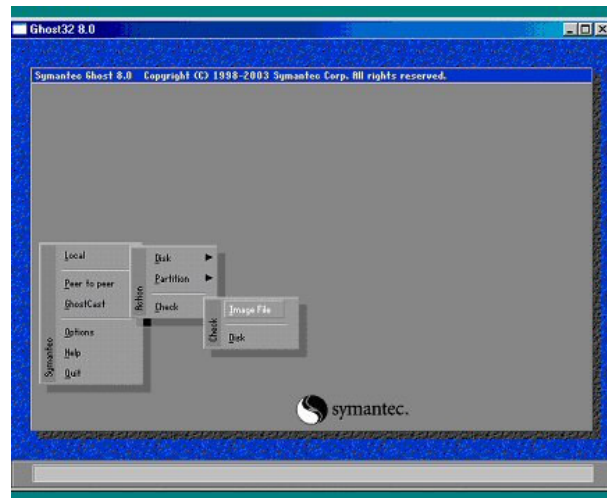
Select the drive where the image is stored,
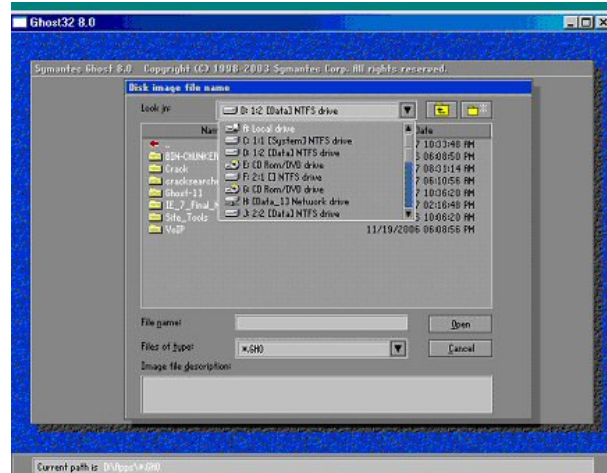
Select the image.
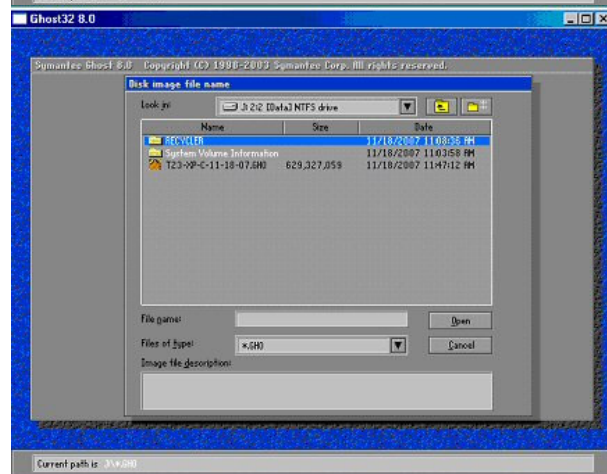
Confirm you want to check the image.
This is a non-destructive check of the data
and file structure.
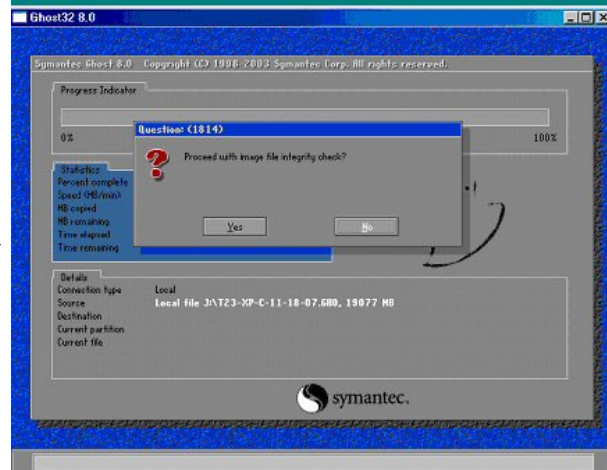
Progress while the check is under way.

Check complete. If there was a problem with the image an error would be displayed and text file written to the A: drive (you can change the path) Read the text file it will tell you why the image is bad. Fix the problem and create a new image.
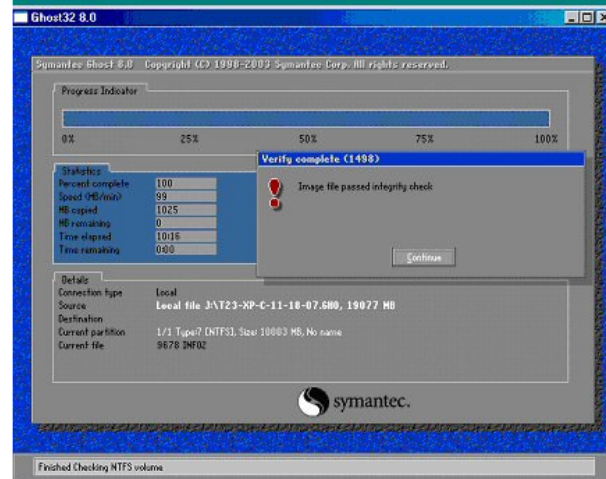
Now store the image in a safe place, I suggest you put a copy on a cd if small enough if t is to big a DVD.

To restore your image the tutorial is here: **Restore Symantec ghost image.**

How to restore an image with Symantec Ghost software

DIY-Computer-Repair can help!

## Restoring with ghost imaging software will save you hours of work!

On a previous page I showed you how to make an image of your hard drive. Here I will show you how to do the restore!

Boot your computer from an external device, because you are restoring or replacing the Boot Partition of the computer you don't want it running or the process will not proceed.
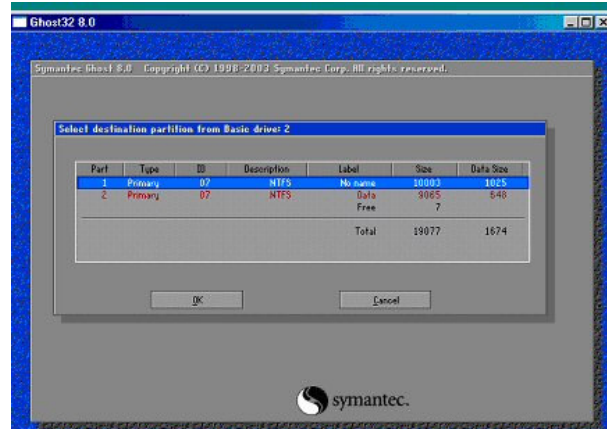
Start the Ghost program:
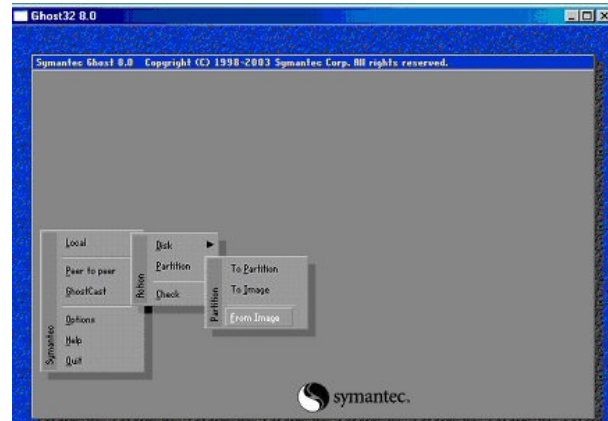
Select image / partition / from image.
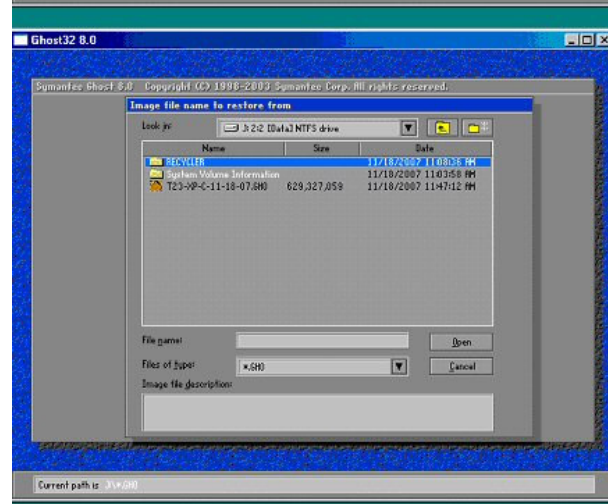
Go to the storage drive and select the image file.

Next select the target drive, note there are two drives here, one is the target drive (top) and the source drive (bottom). Becareful you will over write the storage drive if it is a hard drive!

Proceed? This is your last chance to insure you are on the correct drive, look as the white writing at the lower half of the screen, it tells you about the image file and the target drive.
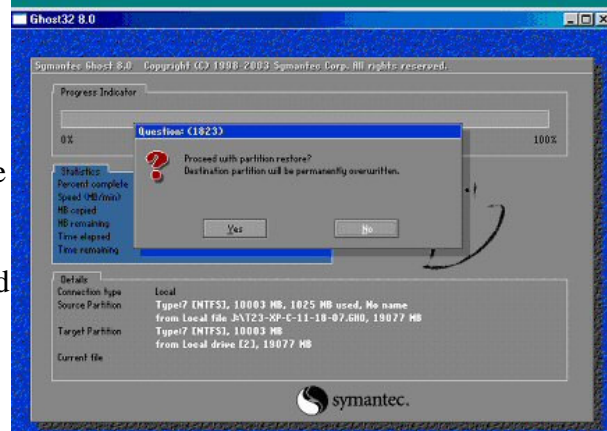
Progress indicator, this drive was being imaged from an external USB hard drive, it is slow because the port on the target computer is a ver 1.1 USB port, very slow.
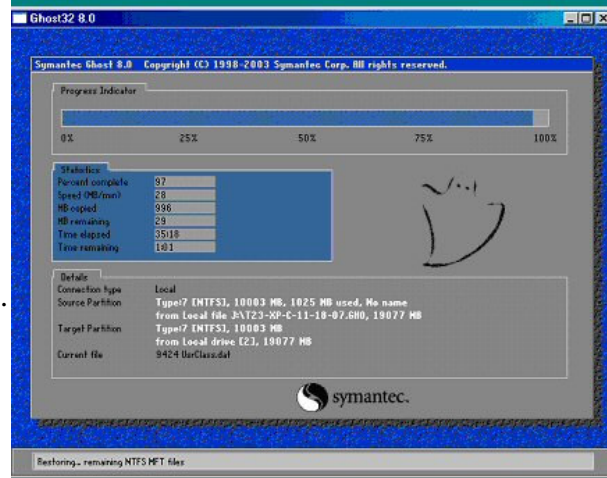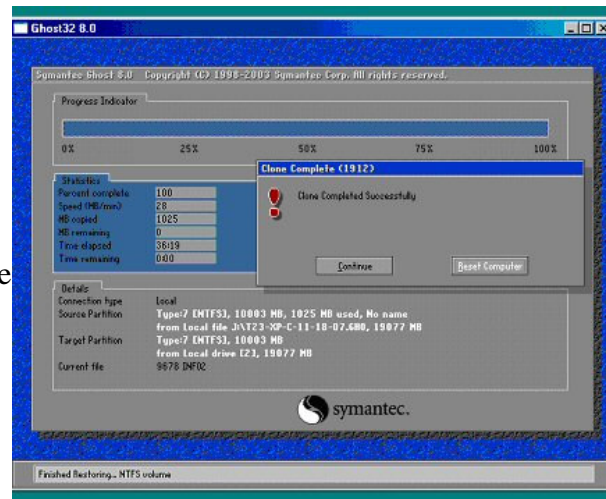
Image now on the target drive, you can restart now or shut down the system and remove the external drive if it is a bootable device. Restart and Enjoy!

If the image is fairly new then your data restore from your back up should go quickly. If the image is pretty old and you had installed software programs since the image was made you will have to reinstall those also. The idea is to make an image when you feel there has been significant changes to your software programs.

And remember: **Your recovery is only as good as your last backup!**

Installing new hardware, a how to...

DIY-Computer-Repair can help!

You have some new hardware, now you need to install it!

First the cautions:

- **Ground yourself and the computer!** ESD will kill your new hardware faster than you can snap your fingers!
- **Disconnect the power cord from the computer!** Accidentally powering up the computer is not good for the components while your hands are inside the computer.
- **Insure that the component is seated all the way in the slot.**
- **Be careful with cables,** if you break the receptacle on you new device you will have to buy another one!

Install you new device in the slot, memory is special. Memory has two locks, one on each end use both hands to press one each end of the module, you want it to go into the slot all at once, not on an angle. When you press it in and it seats the locks will go into position with a 'click', press them inwards on the memory module to insure they are locked. [A misaligned memory module can burn up if not properly seated!]

Put the cover back on the computer, this will preclude you from reaching inside the computer while it is powered up. Touching the components while powered up is dangerous and could cause you to be badly injured if not killed. Also moving cables while the computer powered up may damage the component it is connected to.

Connect any external cables (keyboard, mouse, etc) that you disconnected. Before you power up have the key press to access the BIOS settings, you will want the BIOS to see the new hardware before the OS does.

Power up, once the system is running log on. Once the welcoming screen goes away the OS should find your new hardware, if it needs any drivers have the install media available. Assuming that the hardware was found and the OS loaded the drivers install any programs that are associated with the new hardware.

New hardware or a device not functioning when installed.

You install your new card in your computer and start it up, after the welcome page or log on, nothing. The computer doesn't see your new card. What is going on? You know the device is good, it is brand new!

Well there are some things that you need to look at. First shut the computer down. Check the card, is it seated in the slot properly? When you are satisfied that it is seated restart the system. While it is starting use the key press to get into the BIOS settings. You will not see the card but the BIOS needs to be saved. One more thing you can do in the BIOS is go to the PCI screen and see what interrupts are being used. Check the documentation for the card and see if it requires a specific interrupt, if so set it for the slot that the new card is in.

Save you changes and restart the computer, did the OS find the new hard ware?

Yes, enjoy!

No then you have some more work to do. Check the new device's documentation, is there a setup program for the device drivers, if so run it. Did the OS find the device?

Yes, done!

No then you will need to restart the system, once restarted did the OS see the new device? Yes, done! No then open System Manager (Right click on My Computer, select Manage from the menu, drop down to Device Manager) locate your new device, is it listed by name or is it a generic yellow '?'. Either way right click on the device, go to properties. On the General tab check the Device status. The status reports either working properly or there is an error. Check the Device usage box, if it is reporting 'Do not use this device.... (disable)' change to 'Use this device (enable)'. Next go to Driver tab it should report a Driver Provider, Date, Version, and if it is a signed driver. If there isn't a driver listed close the properties page.

Anywhere in the white space in the right window of the Device manager, select 'Scan for hardware changes'.

Did the OS find the new hardware? If it finds the hardware let it search for drivers. If it doesn't find the drivers, redo the scan for hardware changes, when the 'Welcome to the Fond new Hardware Wizard' opens select 'No, not this time' click 'Next'. Select 'Install from a list of or specific location (Advanced), click 'Next'. On the next screen is where you can search for the driver. Select 'Include this location in the search' if you know the location type it in or do a search for your drivers. The program should fine your new hardware drivers.

Another step you could take if the above step fails but is more involved:

Instead of selecting 'Include this location in the search' select 'Don't search I will choose the driver to install'. In the 'Hardware Type' window scroll down to your device type and

highlight it. Click 'Next', regardless of what is displayed by the window select 'Have Disk...' Click 'Next', Type in the path to the drivers or browse to the location. Click 'OK' you will be given a list of devices that the program found, select the driver of your device. Sometimes the will be more than one device that is supported select yours. Complete the install.

Motherboard Upgrade - A 'How to...'

DIY-Computer-Repair can help!

Sometimes a motherboard upgrade is what the Doctor ordered!

So you want to upgrade the motherboard in your computer. Ok, lets have a look at some of the things you need, things you need to do before, then things you need to do after the upgrade.

What you will need:

Patience

Back up *your data before you start this procedure!! Your OS may crash when the system is started!!*

Tools:

Screw drivers, flat tip and a cross point (Philips)
Older motherboards use a metal stand off (this is a spacer that goes between the motherboard and the computer case/tray) these were normally 1/4" hex made out of brass or aluminum. A small adjustable wrench to hold the stand off while you remove the screw that connects to the motherboard.
Anti-Static strap.

Caution: *Before you take anything apart* **insure** *you have a static ground strap and that it is connected to a known good ground.* **ESD** *will kill your project before you get to power it up.*

Preparations:

Read the installation guide for your new motherboard, note the section on processors and memory. It is easier to set jumpers and dip switches when the board is out in the open than inside the case.

If you are new at this I suggest you take a picture of the inside of your computer case, you can use it as a map on how the cables are laid out when you are at the point of reconnecting your devices. The cables need to be neat because having them in a jumbled mess **restricts air flow.**

Move your computer to a well lighted area with lots of room, you will have a lot of parts to remove, you need to keep them ordered for when you start putting them back in to the computer.

Removal of old motherboard:

Open the case, take your picture. Disconnect all cables from the old motherboard, move them out of the way or remove them entirely from the case which ever gives you the most room. If you are not reusing the processor or the memory you can leave them on the motherboard for now. If you are reusing them remove them now, put them in an anti-static bag, be careful with the processor, **one bent pin may ruin it!** Disconnect any of the wires for the reset, led, case fan(s), and speaker, as you remove them note on them what they are for if they are not labeled, some frosted tape works well. Remove any expansion cards, sound, video, etc. You should have a bare motherboard by this time. Look at the motherboard, you will see screws in the board at the corners, there may be one or two in the middle of the board, remove the screws. (Some times the metal stand off will unscrew from the case, if this happens when the motherboard is out of the case, remove the stand off and put it back in the case before installing the new mother board) This is where you have to be careful, slide the motherboard towards the front of the case, it should move about a quarter of an inch. Now you can pick the motherboard up out of the case, the board may be a little bigger than the opening you are trying to take it through so you may have to tilt it to get it out.

Installing the new motherboard:

Before you go any further you need to look at the installation guide and **insure that any dip switches or jumpers are set correctly** for your processor and memory.

Take the new motherboard out of the anti-static bag and place on top of the bag, take the old motherboard and set it gently on top of the new board. Check the mounting holes in the new board against the old board, all the same or are some located in a different position? If they do not match look at the case, you may have to move some stand offs to match the new motherboard, you may have to remove some from the case because the new motherboard doesn't have holes for them. Newer cases and motherboards have a template that covers the area for the external ports, remove the old one and install the new one. Next set the motherboard into your case, if you have plastic standoffs they should come up through the holes in the motherboard, for the metal standoffs you should be able to see the standoff through the holes. slide the motherboard towards the back of the case, before securing the board put one of your expansion card into a slot (this will align the motherboard with the case giving the expansion cards clearance when the motherboard is secured). Secure the motherboard - **CAUTION** - **Do NOT over tighten the screws**. If you use to much torque on the screws you take a chance of cracking the PCB (the material the motherboard is made of). If you crack or break the PCB you may have ruined your motherboard so **use extreme care when tightening the screws.**

Installing the processor -

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Lift the Ziff Socket retainer lever, you should see the plate move towards the hinge portion of the socket. Note the alignment mark on the socket, note the alignment mark on the processor, it will only go into the socket with the marks in the same position. Insert the processor with the utmost caution - **CAUTION** - A bent pin will ruin the processor! If the processor drops into the socket with out any force, press the lever down and lock it on the tab. If the processor did not drop into the socket check it for alignment, look at the pins make sure none are bent! (**Note: - The newer LGA 775 and up processors use touch pads instead of the metal pins [Yea!} so you do not have to worry about bending the pins! Also the processor has two alignment slots on the side of the PCB so installing the processor the wrong way is eliminated!**)

If the processor did not have a heat sink and fan attached apply the heat sink compound to the heat sink (a small amount is sufficient!) then place it on top of the processor, attach the fan, connect the fan connector to the correct fan connection header on the motherboard. Lock the heat sink in place.

Installing memory:

Memory modules are manufactured so that they will only go into the socket on the motherboard in one direction. Note the slots on the module, orientate the module and set it into the socket. using both hands press both ends with equal pressure, you should hear a 'click' and the locking tabs one each end of the socket move inwards on the module. Insert the rest of your memory modules.

Wiring:

Connect up the case wiring, reset button (if applicable) led wires, speaker, any other fans for the case. Next is the power connector. Now you are ready to put all the cables back, hard drive controller cable, CD/DVD controller cable, floppy drive cable.

Expansion cards

Insert each of your expansion cards, connect any wiring these require inside the case, i.e.: Audio cable from cd/dvd drive.

Looks like you are done.........

Well how about a Quality Assurance check?

Check that the memory is seated, check your cables are seated, check your cards are seated and secured. I usually pick the case up and turn it upside down, if there are any loose screws or foreign materials inside the case they will fall out or move and you will know they are in there and need to be removed before you power the computer up!

Considerations before powering up your system:

The motherboard may have different features and devices that the old board didn't. Sometimes Windows 2000, XP, or Vista (which ever OS you had installed) **may crash** because the drivers are not available on the hard drive from the original install. Sometimes it will start and ask for those drivers, they should be on the CD that came with the motherboard. **You may have to reinstall the OS and your applications!**

All good? Nothing loose, no spare screws? Ok, put the cover on the case! The reason I say put the cover on the case is to preclude you from moving a part while the computer is powered up. Moving a part while the system is powered up could cause you extreme harm and certainly hurt the computer.

Connect all your external cables. *Do you know how to get into the BIOS on the new motherboard?*

Power it up -

Did it start?

No -

Did the fan on the power supply spin up?

If not open the case and see if all the case wires, cables, expansion cards, and memory is seated. Some thing has gone to ground.

If it did check the video cable, is it on the motherboard or the expansion card? If it is on the expansion card and you did not get any video check the installation guide on how to disable the onboard video, then restart.

Yes - press the appropriate keys to get into the bios, check that the maximum amount of memory is there, check that the hard drive and cd/dvd are listed. Set the time and date. Most newer motherboards will detect the processor speed and the FSB speed so you should not have to change these. (I will not go into over clocking with this document) If the processor and FSB are not what they are supposed to be check the installation guide for the correct settings and where to change them.

Looks good? Save your settings and restart the system.

Note:

Because you have change a hardware component (maybe more) the drivers for these components may not reside on the hard drive. This may cause the OS to crash when it is started. It is rare that the OS will find enough generic drivers to start, normally an upgrade of this magnitude requires a reinstall of the OS.

When the system starts you should see a bios screen that gives you the processor speed, the amount of memory and sometimes the expansion cards.

If the OS starts and asks for drivers very good! If you have to reinstall the OS this is normal.

Enjoy your new Computer!!

Overclocking - Processor and FSB

DIY-Computer-Repair can help!

Overclocking a processor may damage it, proceed with care!

Overclocking a processor or the FSB (Front Side Bus) to gain an increase in processor or FSB speed. Over the last couple of months I have had a lot of inquires about 'overclocking'. So I think it is time I tried to explain this phenomenon in Layman's terms.

First some technology about processors. Processors work by a change of electrical polarity. In other words positive or negative, yes or no, on or off. The electrical voltage present in a transistor is on, positive, or yes. The lack of voltage is off, negative, or no. Now that is only part of the story, another part is the frequency that the voltage changes, and we call that the speed! Ah-ha, now we are getting somewhere. So there is a circuit on the mother board that controls the frequency, it has a crystal, sometimes two or three, that sets up the 'clock frequency' for the mother board and the processor. The processor gets the frequency from this circuit, so does the FSB.

So we want to increase the speed of the processor and / or the FSB to get a performance boost from the computer. Simple! Well yes and no. It is simple to do but it is not a thing to do lightly, you could damage your processor, memory, and motherboard. So think about it before you overclock your system. *As with all technology you should research the subject, do not become knowledgeable, become an expert.*

When the manufacture designs and produces a processor they go through a testing stage. They know from experience approximately how fast the frequency of processor is by the design. Then through this testing they find the minimum and maximum clock speed of the given design. So when you buy your computer or build your own you know the processor speed is x.x GHz. Normally processor speed it rated 20% above minimum and 30% below maximum. These are general guidelines, some processors may be at the **safety limit of their heat tolerance when they are produced**. One I remember in particular was the original Celerons, the 486 33MHz Celerons could not be overclocked unless you wanted to buy another one in a couple of weeks.

There are a couple of reasons why people overclock their systems. One is they have the fastest processor available [been there, done that] or they can't afford the fastest processor at the time [yup, me too!] or they are waiting for the next generation and don't want to upgrade just yet [gee you guys know me!].

Scenario:

You have a processor and don't want to upgrade to the latest and greatest because there is a new processor about to be released. So you say to yourself -*'Self, why not overclock this processor until the new one comes out?' So Self says 'Ya! Why NOT? GO FOR IT!'*

Well there is **danger** Will Robinson! you could fry a whole bunch of stuff by not heading the warnings about Overclocking!

Because the processor and memory work on voltage and amperage changes it **creates heat,** sometimes lots of heat! An increase of 0.012 volts (*That is 0.012 volts*) will increase the heat out put of your processor by 10 degrees Fahrenheit - 5 degrees or so Celsius. So lets say you bump (increase) your processor speed by 50 GHz. How much heat would that produce above the normal operating temperature? **Unknown**. Each processor has a set operating temperature that you will have to find from the manufacture.

Fist thing you want to be sure of doing is **INCREASE** the amount of **cooling** that the motherboard and processor get. This is fairly cheap and easy to do, *although you are going to raise the noise level of the computer,* by adding fans. One or two will increase the cooling air moving through the computer enough to lower the overall temperature by 10 to 30 degrees depending on the temperature in the room where the computer is located. Next you will want to **increase the size of the heat sink**, the standard heat sink that comes with a processor is only good for an increase of 5 to 10%. If your processor is running at 115 degrees Fahrenheit then 10% would only give you 11 degrees leeway. *So you need to increase the cooling capacity of the heat sink BEFORE you even consider* Overclocking the processor. You also need to know what the operating temperature of the motherboard is before you do any changes. **Warning: Excessive heat will cause the materials of the motherboard, processor, and memory to degrade faster.**

So now you know that the processor's original clock speed is say 2.4 GHz, and the temperature is about 127 degrees Fahrenheit, the motherboard is running at about 95 degrees Fahrenheit. So lets bump that to 2.8 GHz and see what we get - 147 for the processor and 108 for the motherboard. That is about 20 degrees Fahrenheit for 40 GHz speed. (these numbers are from my desktop that is an ASUS P4B motherboard with a 2.4 GHz 533 FSB processor) I also have a larger heat sink with a faster fan on the processor. There are five fans (not including the power supply fan) in the system.

To find out the temperature range of your system **you will have to research** the motherboard, processor, and memory from the manufacture. The ASUS motherboard that I use (above example) states the maximum operating temperature is 135 degrees Fahrenheit and the processor is 165 degrees Fahrenheit. So I am pushing the heat factor by overclocking the system.

Every motherboard manufacture that produces a motherboard that can be overclocked will have a chart for the processor and FSB. **Be aware that the processor and memory have to match,** *you can not put a 533 FSB processor and 667 FSB memory on the same motherboard, it will not run, in fact it will not power up!* So you have a processor of say 3.0 GHz and a FSB of 800 MHz, you want to overclock it to say 3.6 or 3.8. The motherboard and processor may take this speed, then again it may start up and then shut down, **it may even burn up the processor!**

So in closing I will say if you want to Overclock your processor and / or memory do the research! **Or you will be getting out your wallet!**

Partitioning and Formatting a hard drive.

DIY-Computer-Repair can help!

Why partitioning and Formatting a hard drive is important.

A new drive is considered a raw drive, it is useless until it is prepped for use by creating a partition and formatting that partition for use with the Operating System you will use it with. So what operating system do you use? DOS (Disk Operating System), Linux, Windows, Unix or one of the other flavors of operating systems available today?

I will concentrate on DOS and Windows versions of Operating Systems.

So you have a new drive or you have a drive that you can not access for one reason or another. You need to create a place for your data, this is called a partition. In the old days you connected your drive to your computer then started it with a floppy that has DOS on it. Today you can still do that or you can connect the drive and start it with a Windows installation CD. Either way you still have to go through the steps to create a partition on the drive. I will assume you have the drive installed and connected to the computer interface, be it IDE or SATA device.

DOS:

You will need to create a bootable floppy with these two files extra on the floppy as they are not part of the normal floppy. **FORMAT.COM** and **FDISK.COM**.

Boot the computer with the floppy, at the command prompt type in FDISK. You will see a screen about large drives, answer yes to proceed. When the interface opens you will see a menu.

If you have more than one drive in your computer you can select it with the "Current" fixed disk drive:
   On the menu you have four choices:
      1. Create a DOS partition or Logical DOS Drive
      2. Set active partition
      3. Delete partition or Logical DOS Drive
      4. Display partition information.

Use **#4** to find out what type of partition you have:

If it is any type besides DOS you will have to use Non-DOS Partition to delete it.

You will want #1 if this is a new drive, if it is a used drive but you can not access it

select #3, if the partition is good but will not boot select #2.

Selecting **#1:**
   Menu:
      1. Create Primacy DOS Partition
      2. Create Extended DOS Partition
      3. Create Logical DOS Drives) in the Extended DOS Partition
   Select **#1**

The program will verify the drive integrity (check disk)...... (may take a while depending on the drive size)
Next you will have to answer this question:
Do you wish to use the maximum available size for a Primary DOS Partition and make the partition active [y/n]

Here is where the rubber meets the road, do you want the whole drive as one partition or do you want to split it, say one for the new OS you are going to install, and the rest for data?

If yes is the answer then press enter. If no is the answer go to No.

The program will verify the drive integrity (check disk)...... (may take a while depending on the drive size)

Partition is created.

You will get a message that the system has to be restarted before the changes take effect

Restart, go to formatting your new partition

No: the program will check the drive integrity again, notice the line:
Total disk space is xxxxxx Mbytes (1 Mbyte = 1048576 bytes)

When it is done below this line is a new line:

Enter partition size in Mbytes or percent of disk space (%) to create a Primary DOS Partition....................[xxxxxxx]

Enter the amount of space, press enter.

The partition will be created, press escape to go back to the main menu.

Go to #2, you have to set the active partition if this is to be a bootable drive.

On this page you will be able to see the boot partition, or active partition, a list of all the partitions on the drive is at the top, type the number in the [ ] for the drive you want to make active, should only show one drive C: 1 in the list.

You will get a message: Partition 1 made active.

Restart, go to formatting your new partition

Step **#3**
Delete partition or Logical DOS Drive
   A menu will appear:
      1. Delete Primary DOS partition
      2. Delete Extended DOS Partition**
      3. Delete Logical DOS Drive(s) in the Extended Partition***
      4. Delete Non-DOS Partition
If the partition is listed as anything besides DOS then select #4, follow the prompts to delete the partition.

Extended partitions are a throw back to the old DOS days, Hard drives origanl could only have one partition, as drives became more prevalent and larger DOS hit a 30 Meg barrier, that was the maximum size for a DOS partition. To use the rest of the drive the DOS FDISK program was rewritten to add the Extended Partition. This is a kludge, it allows you to create a partition in the remaining space and then create up to four logical drives in that space. I DO NOT recommend using extended partitions. They will corrupt over time and then you can not remove them, a **low level format is required to remove the corrupt logical drives.

***If they are not corrupt **you have to remove** the logical drives before you can remove the Extended Partition. **You have to remove them in the sequence** they were created in reverse order, if you have four logical drives you have to remove the # 4 logical drive first, # 3 next, and so on. **DO NOT remove** a drive in the middle of the sequence, this will preclude you from removing any other logical drives and the Extended partition itself.

Formatting a DOS Partition:

Restart the computer, at the prompt type FORMAT C: /s then press enter, this will format the partition and put the DOS system files on the hard drive making it bootable.

You will see this:

**WARNING, ALL DATA ON NON-REMOVABLE
DISK DRIVE C: WILL BE LOST!
Proceed with Format (Y/N)**

Press y and enter, format will began.
When the drive is formatted you will see: Volume label (11 characters, ENTER for none)?

Enter volume label if you want, finish and restart the computer.

Restart, C:\ prompt will show.

Windows install CD:

Where to start? Put the cd in the drive......... Uh, no... I mean why would you use the Windows NT, 2000, XP, or Vista install cd?

One reason is to remove any partitions on a drive that the OS can not, or maybe you have a virus that a anti virus program can not see or remove because it is in the Main Boot Record (MBR). Or maybe you have a drive that has Linux or Mac partitions on it.

So how would you remove a partition?

Start your computer with the install CD, at the Welcome to Setup screen press enter (you aren't going to complete the setup just do a couple of tasks in the setup program).

Accept the licensing agreement, press F8

The next screen is the one you want to work from. "The following list shows the existing partitions..."

Inside the box you have either some partitions or the drive will show as unpattitioned space.

To remove just one partition, **highlight that partition and press the " D=Delete Partition"**. You will have to follow the prompts to delete the partition, this gives you a second chance just in case you DO NOT want to delete the partition. If you want to delete the partition press "L". To remove all the partitions, repeat the procedure until you have a unpattitioned drive.

To **create a partition press "C=Create Partition".** The next screen will allow you to change the size of the partition, you can select the complete drive or section out the drive into smaller partitions. The reason for making a smaller partition at the beginning of the drive is for the Operating System. I recommend that you use 15-20 gig of the drive as the OS partition and the rest for data*.

Once you type in the size of your first partition press enter, the program will go back to the Setup screen. ***You can create more partitions from here but I do not advise creating Extended partitions.*** You can now remove the cd from the drive and power off the computer or restart it your partition is ready for a format, if you continue it will install the OS.

* Consider this:

If you use all of the drive to install the OS you will not have a separate partition for your data, you should always keep your OS and data separate, most programs will allow you to pick where you install them and where the saved data files are located, always use a separate partition for your data files.

If you create an image of your OS partition you can store it on the data partition until you have it written to a CD/DVD or move it to external storage.

Performance optimization - a How to

Diy-Computer-Repair can help!

Performance optimization, what is it? Should I do it? How would I do it?

Good questions and very few answers on the internet. There is a lot of advice out there on how to optimize your computer's Operating System (OS) from uninstalling unused programs to running **anti-virus** software.

So my advice? **Glad you asked!**

Performance optimization begins with realizing your computer isn't as fast as it was when you turned it on the first time. This is normal. Different things will slow your computer down, too many files on the hard drive, too many 'utilities' running when you start, not enough memory for the programs to run properly.

Your computer should be able to run five of the top software programs simultaneously. I am not joking! You should be able to have these types of programs running while you do something else: email, browser, word processor, spread sheet, and a graphics program. Right now while I am building this web page (typing it up and formatting it) I have these programs running on the desktop: 2 separate Internet Explorer 7's, a RSS reader, email, notepad, and Front Page. My system is responding like it should, not dragging or hesitating. (I also have four separate versions of explorer open for different folders). My screen resolution is set for 1278 x 1024.

How do I do this with a 2 GHz processor and 784 meg of ram (note the processor speed, it is 1/3 the speed of the latest and greatest!)?

Performance optimization!

Ok, so how do I optimize my system? By keeping it clean and making the OS do what I want it to do not what the programmers think it should do.

Temporary files, temp files are files that your word processor, IE, Firefox, and
other programs created for their purpose. They should delete them when you close them but they don't. So first we tell the OS where we want the temp files to be then we delete those others. (Note: After restart you can delete the temp files but not until then. You will need to do a search


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for folders named Temp to find them all)

We need to build a new place for all those temporary files. If you have two volumes then I would suggest you put them on the second drive not the OS or system drive.

Second we need to tell the OS where we want to put temp files, this is done through the system properties pages.

Right click on My Computer and click on the properties or go to the control panel and open System. Go to the Advanced tab, on the Advanced tab we will use these sections: **Performance, Startup and Recovery, and Environment Variables**.
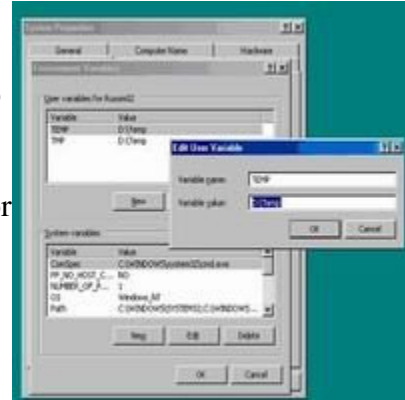
Environment Variables:

When the page opens you will see two windows. The top window is for the
current user, the bottom window is for the System.

Once you have created your new temp folder (I use D:\Temp on the D: drive)then click each line and change it to where your new Temp folder is located. (Note: Current user temp folder will have to be modified for each user of the system if others use your computer).
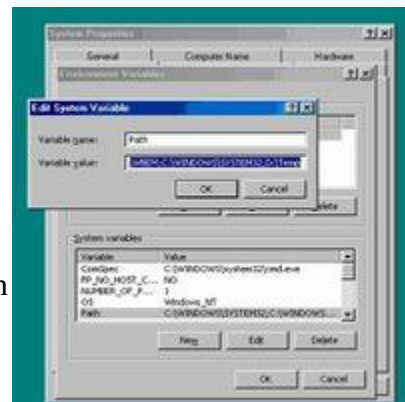
In the System variables window we need to change three lines:

Path: double click on the value, go to the end of the line and add to the path to your new temp folder like this: ;D:\Temp   Note the **;** before the D:\   (putting the temp in the path line will force all programs to use the temp folder, such as an install program).
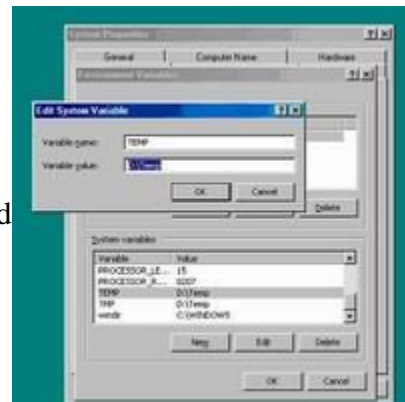
Next scroll down to **TEMP** and double click the value and put in your new path to the temp folder, do the same for the **TMP** value.

These changes do not take effect until after you restart, complete your optimization before restarting.

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Performance:

First: Visual Effects, I adjust for best performance, if you want to use custom
 and select a few will not impact performance but the 'Let windows choose....' will definitely cause performance to degrade.

Second: Click on Advanced, go to Virtual Memory, click on the 'Change' button. *(First let me explain something about the 'Virtual Memory or Swap File', this is a file where any time you open or use more memory than the physical memory installed in the system is put temporarily. That is to say you have 512 meg of physical ram installed. Once you open enough programs that the memory usage goes past the 512 Meg of ram then the OS will start to move unused programs from physical*

memory to the swap file. Now there is no hard rule on how much space you give this swap file, from my experience it is around 1.5 times the physical memory. Once you go past 2 gig then it takes to long to read and write the swap file every time something is swapped from ram to the file or from the file to ram regardless of the processor speed. If you have more than 2 gig of physical memory in your system you will need to spread the swap file across more drives, you can only have one swap file per drive. The only systems I have worked on that this was not valid were servers with more than four processors.)

To set your 'Virtual Memory' select the drive, then put in the 'Initial size' (the size of your

 physical memory, then in the 'Maximum size' put in 1.5 times that. Set the second drive (D:) file sizes, then modify the fist drive (C:) *(normally I remove the swap file from the C: drive)* then close the page, if you get the, 'System needs to be restarted' message click ok, it will not restart yet.

Startup and Recovery:

This one is a personal type tweak. What I mean is you do not need to do anything here **unless** you remove the swap file from the C: drive. If you remove the swap file from the C: drive you will get a warning that the system can not write a Dump file for zero bytes.
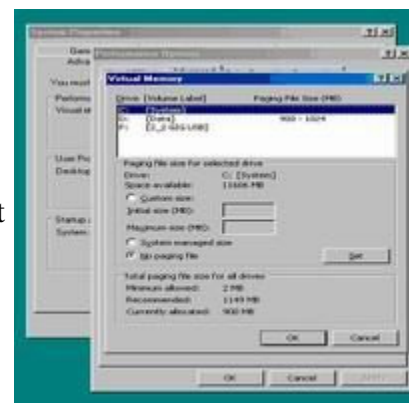
Under the System failure heading I remove all check boxes, I also select (none) for Write debugging information. The reason is that unless you suspect that you have an unstable system it only creates more overhead for the system to read at startup.

The idea of optimizing your memory usage is to keep the system memory at it's lowest point and keep all programs in the physical ram vs. swapping them out to the hard drive.
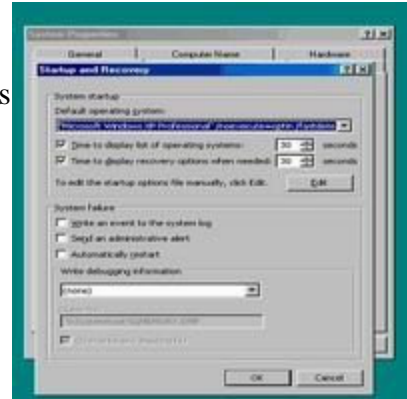
Internet Explorer:

This is the last tweak before restart. on the desktop icon for Internet Explorer right click and go to properties, on the 'Browsing history' heading click on Settings.

You can control how much disk space is used on this page, I set mine to 10 meg. At the bottom of the page you can change how many days the history will keep, select what you feel is appropriate for your use. Then click on the button 'Move folder...' browse to your temp folder. Once you close the properties pages you will automatically be logged off, once you log back on you still need to restart your computer to complete the other settings you have changed.

Want to know more? There are more ways to optimize your system to regain some of that memory that is wasted by non essential programs, visual effects, and services on the More...Performance optimizations page.

More Performance optimization - a How to

Diy-Computer-Repair can help!

Once we have the primary OS optimized there are some more Performance optimization tips that can be done to make your computer as fast or maybe faster than it was the first time you started it. **Want to know more?** Read on!

Startup, a lot of install programs dump their main program short cut into the startup folder. There are two startup folders you will need to look in to determine if you want a program to start automatically or not.

All users, and your profile, open explorer, when it is open it will default to your user profile, open Programs under Start Menu, go to Start up folder. Have a look at any programs in the folder, if you think you can do with out the program starting automatically then move it up to a higher folder or delete it. Do the same for the All users profile.

Next look at the tray on the main task bar, there are a lot of icons there, some can be turned off at the tray others will have to be turned off either in the control panel or through other means. Some of the icons (programs that are run as services) may not be turned off, the icon for 'Safely Remove Hardware' is one such icon. Turning off these icons will save you some memory depending on the service, there is no set memory usage size for these icons. If you need to know how much memory an icon is using you can open the Task manager, go to the 'Performance' tab look at the graph 'PF' under the graph is a number, this is the amount of memory all programs running at this time is using. Turn off the icon/service display, note the change now you know how much memory that specific icon was using. Although this may be nit-picking but if you have a lot of icons sitting in the tray waiting for you to click on them but never do it is a waste of memory that you could be using for your more important programs like Doom!

The next tweak **concerns services**, now this may not be something you feel comfortable doing then skip this section. You do not need every service that is running, how do I know? Because of experience of over 20 years fixing the problems that the OS and install programs cause.

To get to the services right click on My Computer, go to Manage on the menu, or go to Control Panel, open System. there are three main topics in the left window, select Services and Applications, then click on services. It is easier to use the standard view than the Extended unless you open the page up.

So now which ones do you turn off (Disabled)? And Why?

Name	Comments
Alerter	Not required unless the computer is a Server in a domain
ClipBook	Unless you use the Clipbook function to copy large amounts of data you don't need this (by large I am speaking of Gigs at a time
Error Reporting Service	This is also a server function
Fast User Switching Compatibility	I turn this one off because it is a security risk, some viruses use it.
IMAPI CD-Burning COM Service	Even if you have a CD/DVD drive that you can burn with turn this off, will cause problems with 3rd party burning software
Infrared Monitor	Turn this off unless you want to connect two computer by using the Infrared device in some systems. I was never successful in making it work reliably.
Messenger	Always turn this one off. This is a domain utility only, viruses use it also.
Network DDE	Legacy network service
Network DDE DSDM	Another legacy network service
Portable Media Serial Number Service	If you want the Microsoft video player seaching the internet everytime you put a CD/DVD in your drive leave this on.
Routing and Remote Access	If you use Dial Up to connect to the internet, this needs to be on.
Secondary Logon	This needs to be turned off because the Fast user switching is turned off.
Telnet	Always turn this one off. It is the hackers dream to get into your computer!
WebClient	If you are not building web sites, turn this off.
Windows Media Connect Service	Turn this one off, you do not want to share media with anyone, you can upload your media to a lot of places, never share, opens the doors for hackers.

The next thing we want to look at is your display properties. You can gain back valuable video memory and processor speed with these changes.

Your Theme, if you have a background that is a high resolution graphic this will consume most of your video memory, it also consumes up to forty percent of your processing power. So you will want to either turn off the background or change it to a less graphic intense background. I have found that a solid color is the best for a back ground. It is also easier on your eyes. Go to Control Panel, then open Display. On the first page select your Theme, then go to the Appearance tab. You can change the Windows and buttons style, Color Scheme, and the Font size. Look at the bottom right there are two buttons we will look at Effects and Advanced.

Under the Effects button I always turn off all options, The only one I an think of that would be of use also corresponds with the Font size in the paragraph above, Large Icons. If you increase the font size to large or extra large then it may make the Icons look out of proportion.

Under Advanced you can change the color of the background only. Because I used to work in a 'Data Center' where there are banks and banks of computers and they keep the lighting low I started to notice that bright blue or other colors bother my eyes so I use green, very smoothing in my opinion. Your back ground is important because of the contrast between the background and the document or program you are working on.

For your security I would recommend that you set the screen saver. You know your work habits and do not want the screen saver to come on while you are working and a long telephone call comes in. Then again you want it to be set at a short enough duration if you leave the computer unattended the screen save will come on. Be sure to select the option to lock the computer when the screen saver is on.

Here is a small antecedent of a friend of mine:

My friend is normal computer user, in other words he was a typical business person that used a computer. He would often take his work and laptop home. One day something was going on and he left his computer on. His two year old decided that Daddy wasn't quite done working and started banging on the keyboard, moving and clicking the mouse. Need less to say he leaned his lesson, because jr deleted a lot of his current documents.

There are two more areas that you should consider optimizing:

Your hard drive would server you better if you defragmented it on a weekly or monthly basis, read up on it on my defragmentation page.

System Manager - what is it?

Diy-Computer-Repair can help!

The System Manager

Over the past six months as I built this web site I used a term '**System Manager**' and have received numerous queries as to what it is. So to help out those that do not have the experience with Windows that a lot of us have I am going to give a shot at explaining the ins and outs of the System Manger.

The system manager is a tool that you can use to manage different functions and options for the Windows operating system.

You can get to it either by right clicking on the 'My Computer' icon and selecting 'Manage' or open the control panel and opening the 'System' icon.
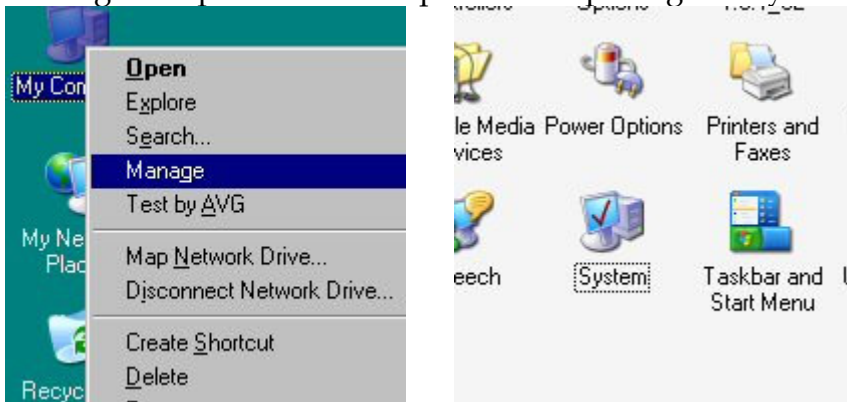
This is called a MMC snap in, it is basically a small program called by the Microsoft Management Console. It has two windows, on the left is the main index of items that you can manipulate. On the right is a more granular index that you can actually work with.

The index has three separate areas, **System Tools**, **Storage**, and **Services and Applications**.
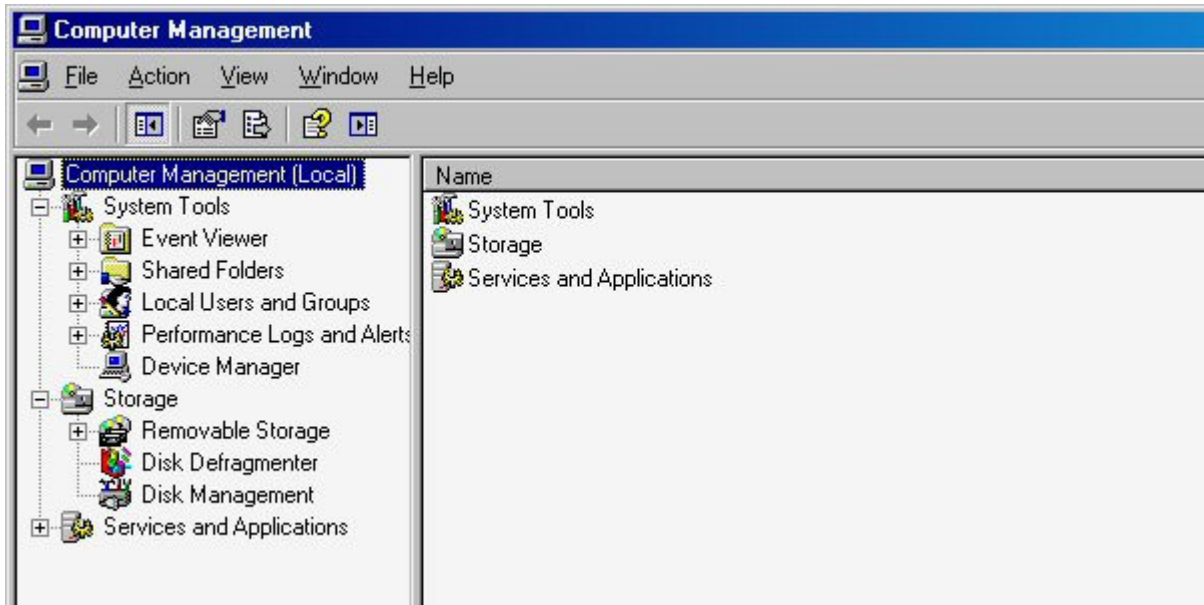
Lets look at each of these one at time, starting with the first major section **System Tools**:

The **Event Viewer** is a list of four logs Application, Internet Explorer, Security, and System. Now some of the information in the logs is quite cryptic, you may have to go to Microsoft or the application publisher to find out what an error code means.

The **Application log** is where you would find information, warnings, and errors generated by your applications. Have an application that is having problems, look here for the cause.

The **Internet Explorer** log is for IE information, warnings, and errors generated by Internet Explorer.

The **Security log** is for security and audit related information, warnings, and errors.

The **System log** is for system and hardware information, warnings, and errors generated by the operating system, hardware drivers, or even the hardware.

The next item in the index is the **Shared Folders**, here are all the shares for your computer.

Next is the **Local Users and Groups**, here you can create or delete local users, ad and remove users from the local groups.

One of the most useless items is the **Performance Logs and Alerts**. I say useless because you are not supplied the tools nor the training required to use the Performance logs or how to setup the Alerts. Even experienced MCSE's have trouble using and interpreting these logs.

Last is the **Device Manager**, this is a very useful tool, you can gain a lot of information from the listing that is other wise hard to find. You can see at a glance a device that is not working and get a rudimentary description of the problem, like most Microsoft errors you have to decode the error to find out what the underlying problem really is.

The Second major index is **Storage**

Storage is broken down into three parts: Removable Storage, Disk Defragmenter, and Disk Management.

Removable Storage is any media that you can remove from the system while it is operating including but not limited to: CD's, Tapes, external drives.

Disk Defragmenter is a process that will defrag your hard drive(s).

Disk Management is where you find the properties of a drive, partition, format, or change drive letters of a drive.

The last major section of the index is **Services and Applications**.

Applications are only Microsoft programs installed by the Operating System.

Services are programs that are installed to run in the background with out intervention or interaction by the user, including but not limited to network, video, sound, anti-virus, automatic updates, and so on.

WMI Control, Window Management Instrumentation. This is a Microsoft Operating System application.

Indexing Service is a service that indexes your computer including but not limited to your hard drive and all the files, your applications and so on.

Internet Information Services, if you have the local Web Server installed this is where you would create local web sites, control how they work.

There maybe other Microsoft Applications installed here that I have not listed.

System Manager - System Tools

Diy-Computer-Repair can help!

System Tools and what you can do with them.

The **Event Viewer** is a list of four logs Application, Internet Explorer, Security, and System. Now some of the information in the logs is quite cryptic, you may have to go to Microsoft or the application publisher to find out what an error code means.
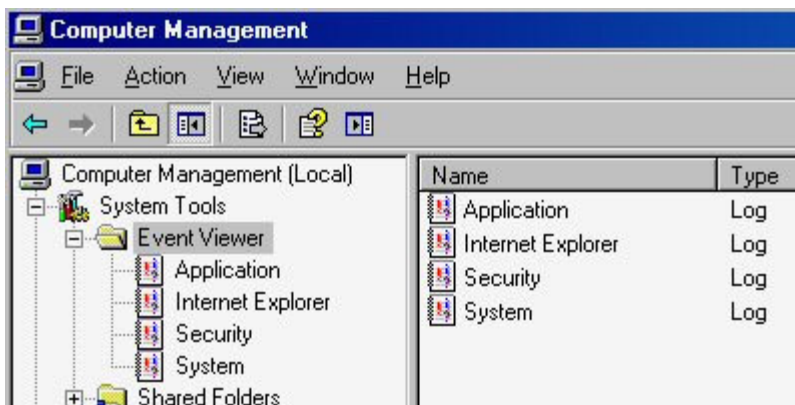
The **Application log** is where you would find information, warnings, and errors generated by your applications. Have an application that is having problems, look here for the cause. When you have an application problem the publisher's tech support may ask for you to save this log and email it to them. They will then have a better idea of why an application is having problems. This log is set to over write itself every seven days and with a default size of 512 kb (kilobytes) this is fairly small and if you are experiencing problems with an application you may want to increase the size

The **Internet Explorer** log is for IE information, warnings, and errors generated by Internet Explorer. On the systems I have seen there is rarely any information in this log.

The **Security log** is for security and audit related information, warnings, and errors. When your computer is setup this log will stay empty until the computer joins a domain at that time the domain controller will set the parameters for Audit of logon/logoff and other services.

The **System log** is for system and hardware information, warnings, and errors generated by the operating system, hardware drivers, or even the hardware. This

log has the most information, it logs a lot of information that your computer generates when it is active, from services to hardware. These logs are very informative when you are having a problem with a service, device, or application. All information, warnings, and errors are logged here if the service or driver installation program requests it be logged. Note: not all installation programs ask for logging to the system event log.

The next item in the index is the **Shared Folder**s, here are all the shares for your computer. You can use this tool to share a folder [not a file!] or to stop the sharing of a folder. You can also set permissions for a folder from this tool. Very handy.
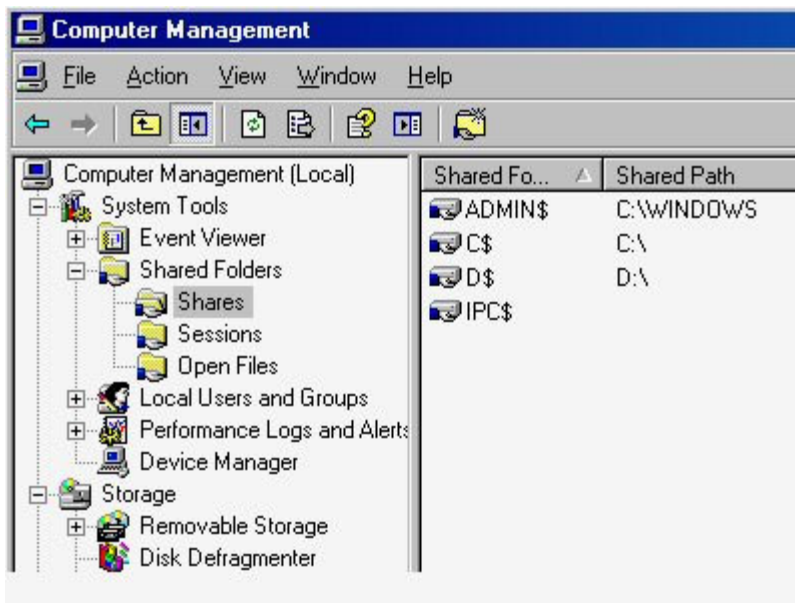
Next is the **Local Users and Groups**, here you can create or delete local users, ad and remove users from the local groups. This tool allows you to create additional users, assign them to groups, set passwords, and assign permissions to other resources on your computer. You [with the appropriate permissions] can also delete user id's, be very careful of what you change here, it can be catastrophic! One thing I will mention: the user id Guest, it is also a member of the Local Group Guests, as a security precaution I always remove Guest from the Guest group, change the password and disable the account if it has not been disababled already.
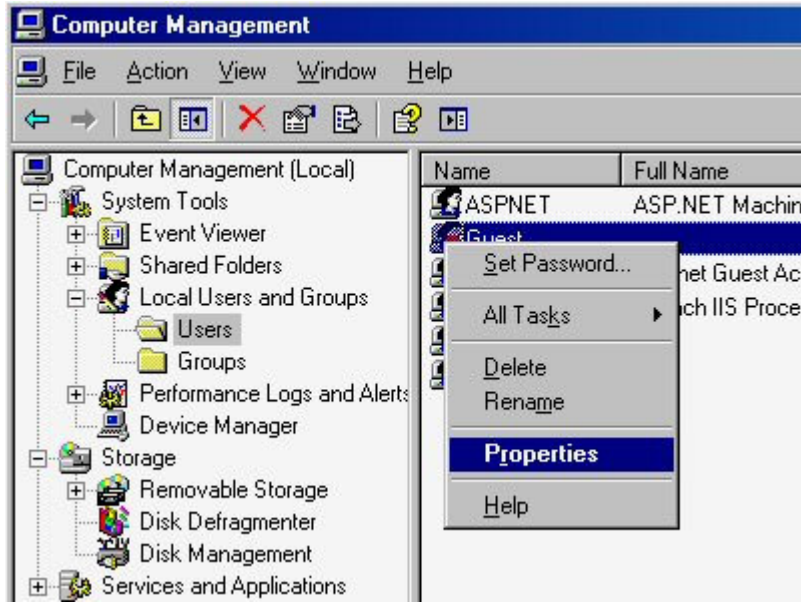
One of the most useless items is the **Performance Logs and Alerts**. I say useless because you are not supplied the tools nor the training required to use the Performance logs or how to setup the Alerts. Even experienced MCSE's have trouble using and interpreting these logs. Because this program is part of the Operating system you can not delete it from the console. You can how ever disable the service, not a good idea, disabling the service will cause a lot of errors in the system log.

Last is the **Device Manager**, this is a very useful tool, you can gain a lot of information from the listing that is other wise hard to find. You can see at a glance a device that is not working and get a rudimentary description of the problem, like most Microsoft errors you have to decode the error to find out what the underlying problem really is. This is the second place I look when I am trouble shooting a problem, the first is the Event Viewer.
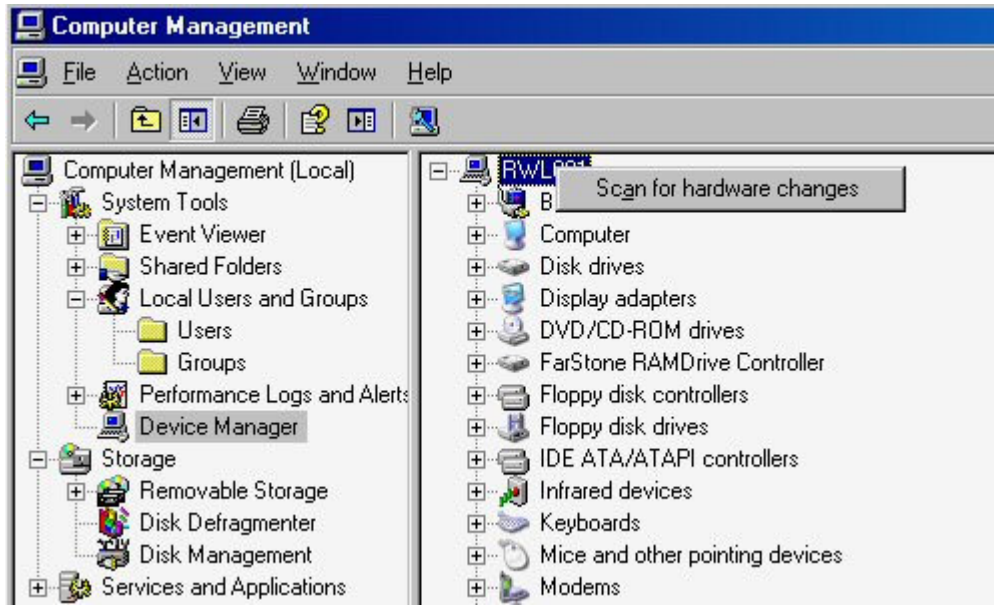
This tool will save you a lot of time, it will also make you stand back, look at the computer in a quizzical way and scratch your head. When you right click on a device in the right hand window you get a menu, go to properties of the device and it will tell you why it is not working, well in a way.

The codes are simi-self explanatory. If you have a code of say 10, device failed to start. Ok you already know the device failed to start but what does code 10 mean? It means it does not have power [from Microsoft's web site] but that does not tell you why it does not have power. You can from this tool: uninstall the device, up or down grade the driver, or disable the device. You can also look at such things as the interrupt [which is meaningless in the PCI world today] you can see the memory range the device uses, this is useful if you have documentation that tells you where the device should reside in memory.
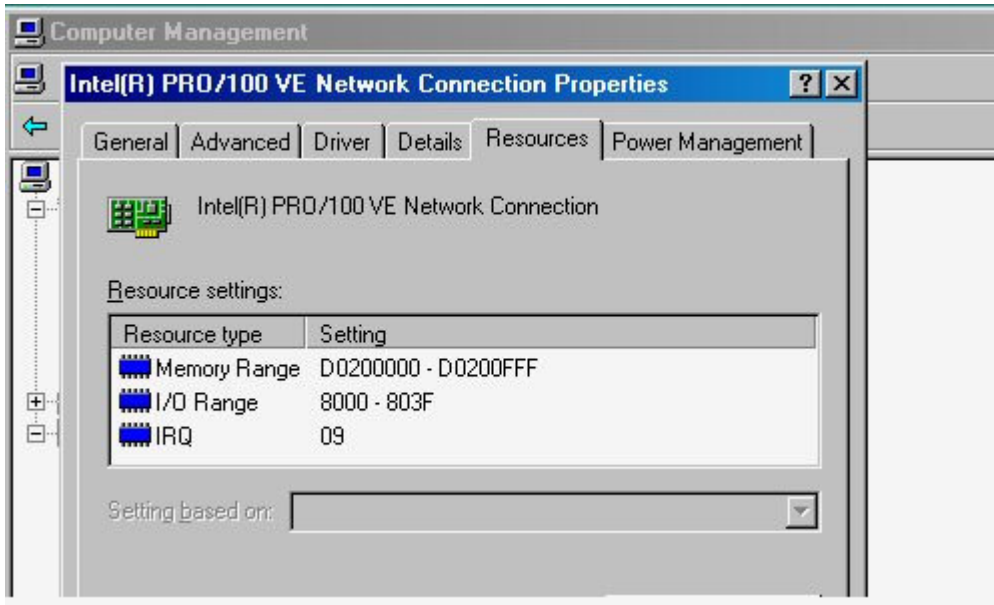
Also you can use this tool for some power management tasks, lets say you installed a network card and after a certain amount of time it powers off, but you can not find the power settings from the control panel/power settings or from the network properties of the network card [netgear cards come to mind with this issue] the power setting is in the in the properties from the device manager.

And one last thing, as with most [using this term loosely] Microsoft products putting the mouse pointer in some white space, and pressing F1 will bring up help.

System Manager - Storage

Diy-Computer-Repair can help!

Storage is broken down into three parts: Removable Storage, Disk Defragmenter, and Disk Management.

Removable Storage is any media that you can remove from the system while it is operating including but not limited to: CD's, Tapes, external drives. If you want to use this tool you can categorize your cd's, make 'pools' for them. If you have a tape drive attached to your computer this is the tool you would use if you do not have a third party backup program installed. This tool along with the built in backup program will allow you to catalog, erase, and test your tapes.
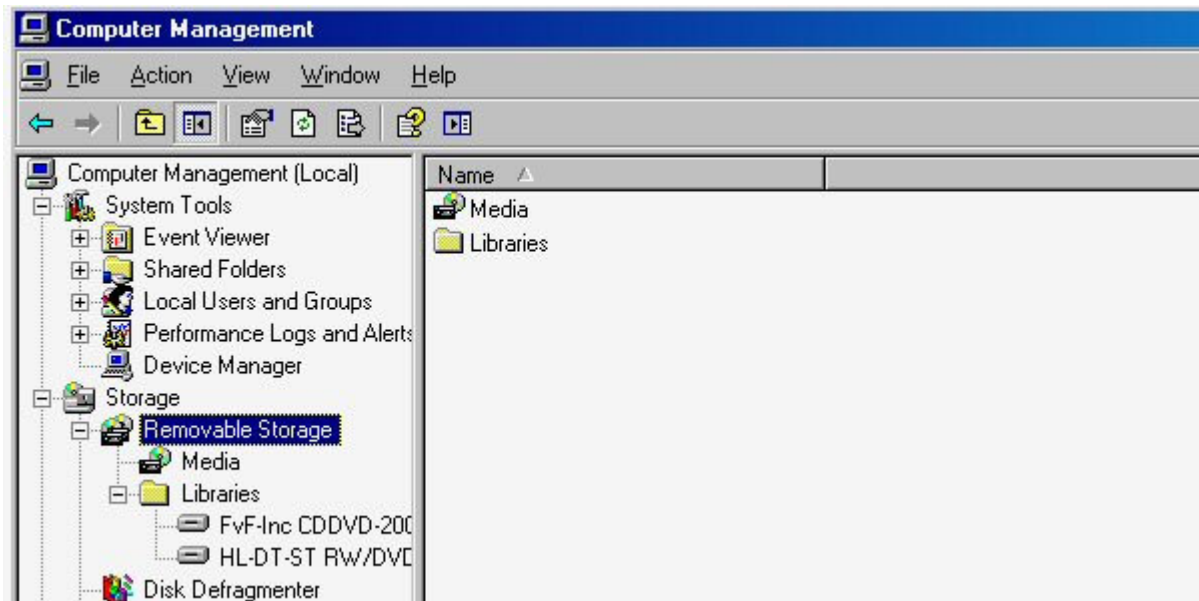
Disk Defragmenter is a process that will defrag your hard drive(s). This tool is used to defrag your volumes. It is fairly easy to use and is of moderate quality, most third party defrag programs will do a better job but after all it is free. As you can see from the graphic the drive should be defraged because the files in red are fragmented. **Defragmentiing** your drive will increase the performance when opening or closing files.
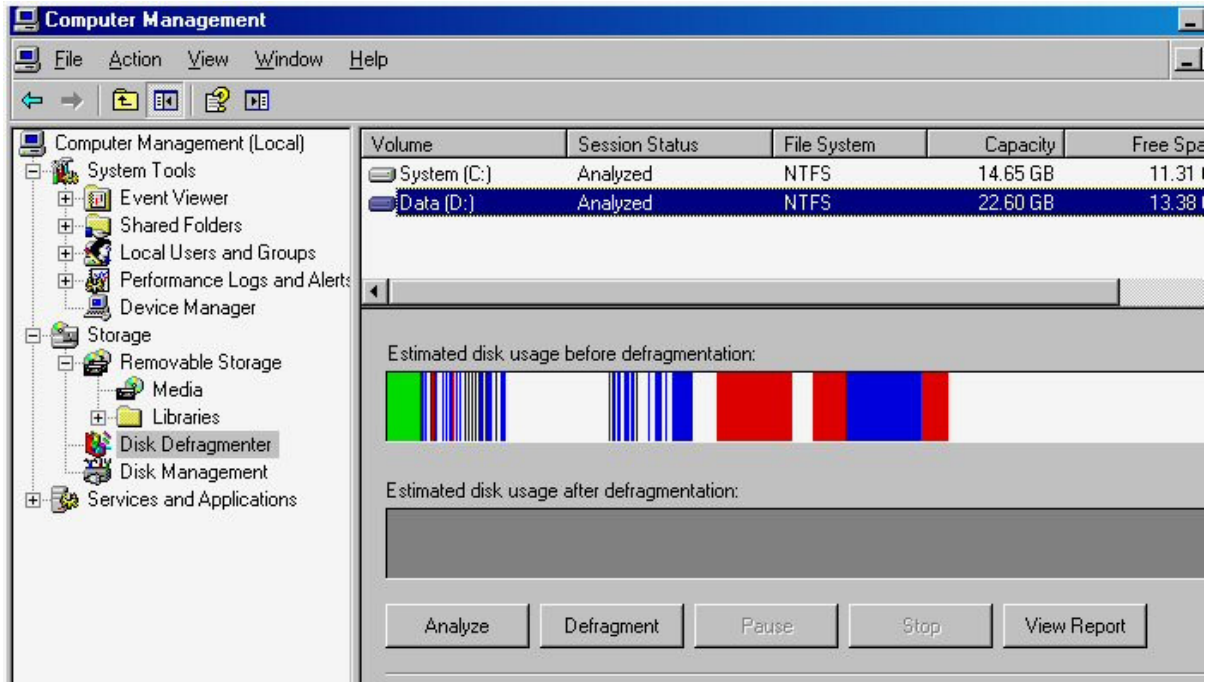
Disk Management is where you find the properties of a drive, or partition, format, change drive letters of a drive. With this tool you can: create a partition, create a volume, change a drive letter, delete a volume, delete a partition, or format a drive. You can also use this program to get the properties of a particular drive. It has some low level information that the propitiates of a drive from 'My Computer' doesn't have such as the manufacture, the bios name of the drive, and some drive characteristics. A very handy tool
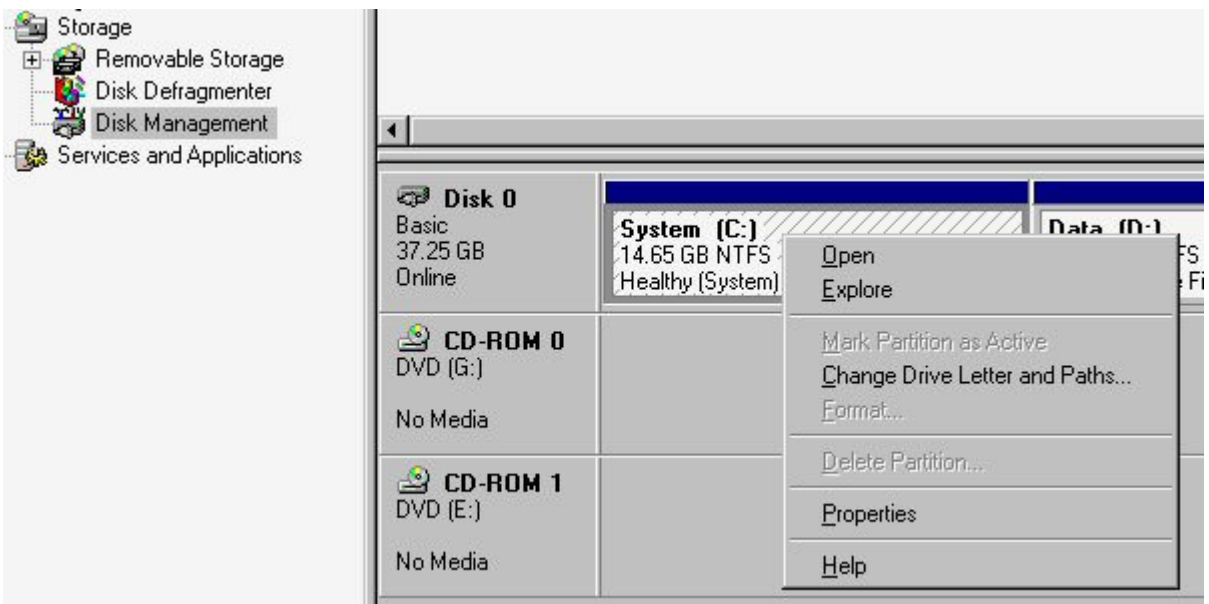
And one last thing, as with most [using this term loosely] Microsoft products putting the mouse pointer in some white space, and pressing F1 will bring up help.

System Manager - Services and Applications

Diy-Computer-Repair can help!

System Manager - Services and Applications view:
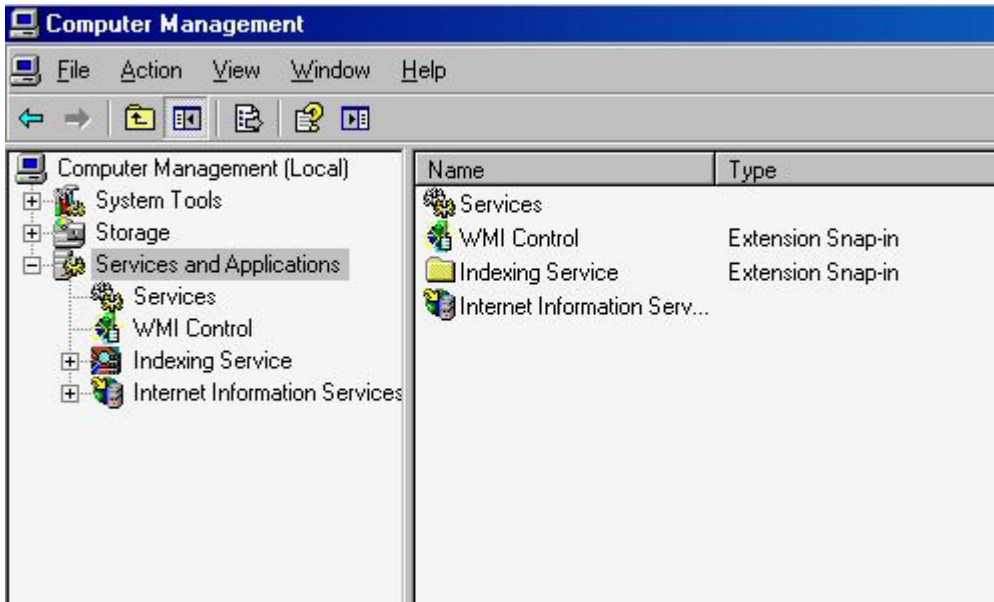
Services are programs that are installed to run in the background with out intervention or interaction by the user. From the right window if you right click on the service you can control the service. You can stop, start, restart, disable, or set the way the service will start.

This is the Extended view, if you use this view [the default view] in the right window where you see the 'Select an item to view...' when you select the service a description will display what the service does.
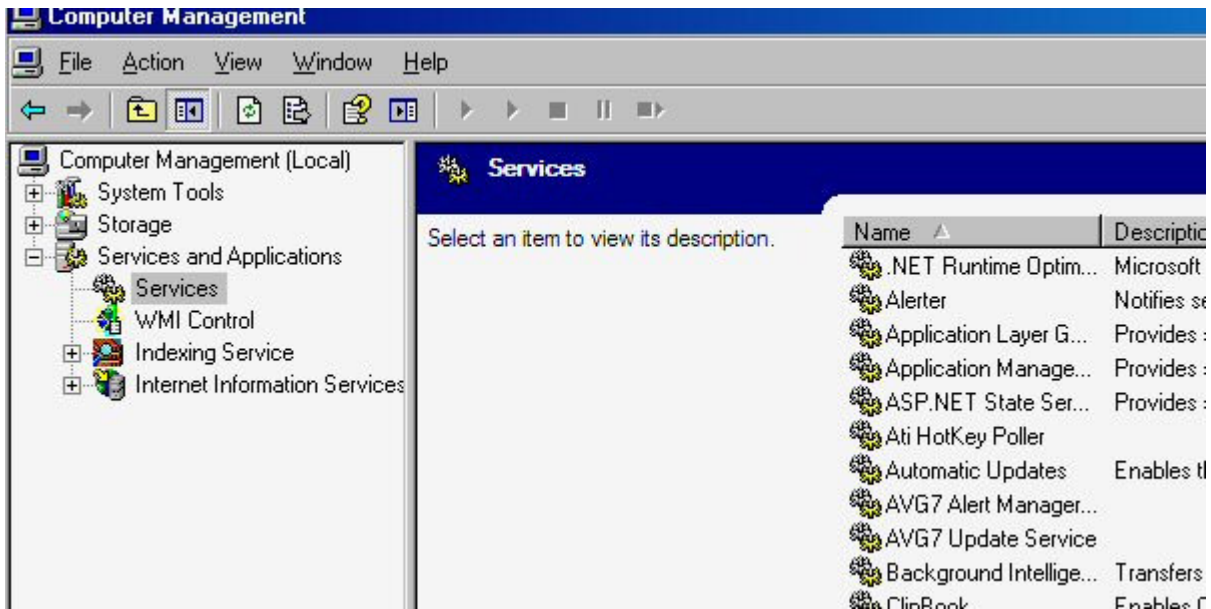
This is the Standard view, it takes up less space, for those with limited viewing area this is a better choice. You select this view by the tab at the bottom of the manager. You can sort the view by clicking on one of the column headers, such as Name, Description, Status, and so on. One thing that you should do for s**ecurity** is to change the Log On, as you can see by the graphic I need to change the ASP.NET to **Local Service** from **Network Service**. Some hackers have figured out how to spoof the Network Service account. Always something........
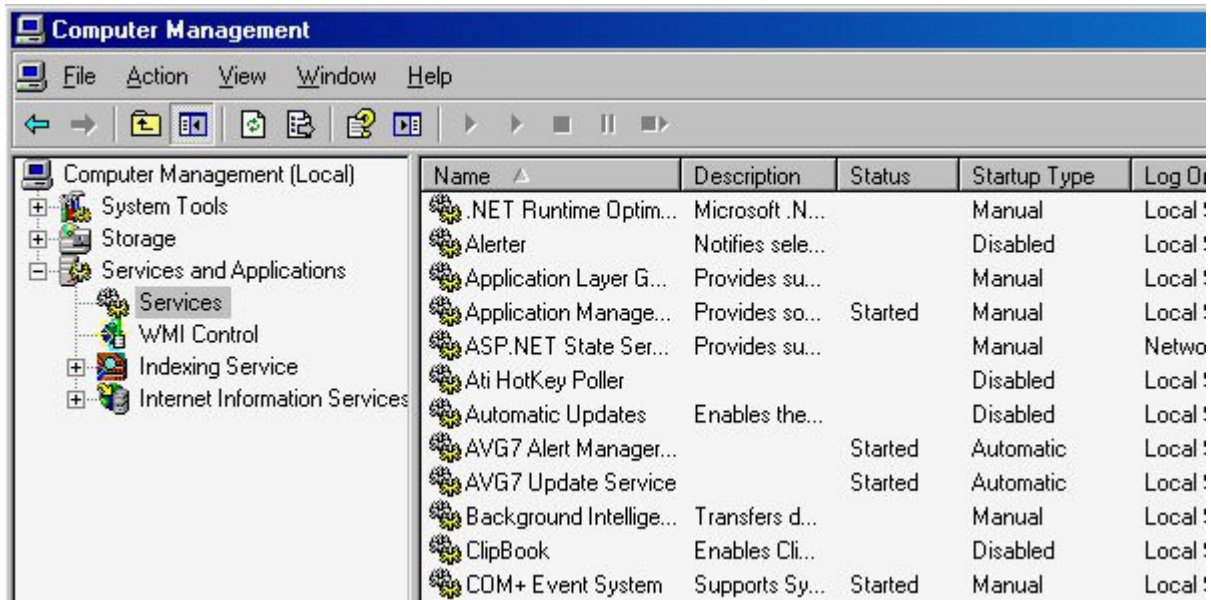
Properties of a service view. From this view you can change the Startup type, stop, start or disable the service. It also gives a description of the service and the actual path to the executable, this information is handy if you are having a problem with the service and need to find the actual file or path for regedit. You can also find out what other services

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depend on this service or what services it depends on to start. You can set the Recovery rate also. If the service is having problems and is shutting down unexpectedly you can set the recovery to restart the service. For some services that require an account to start you can set the account and password in the Log On tab.
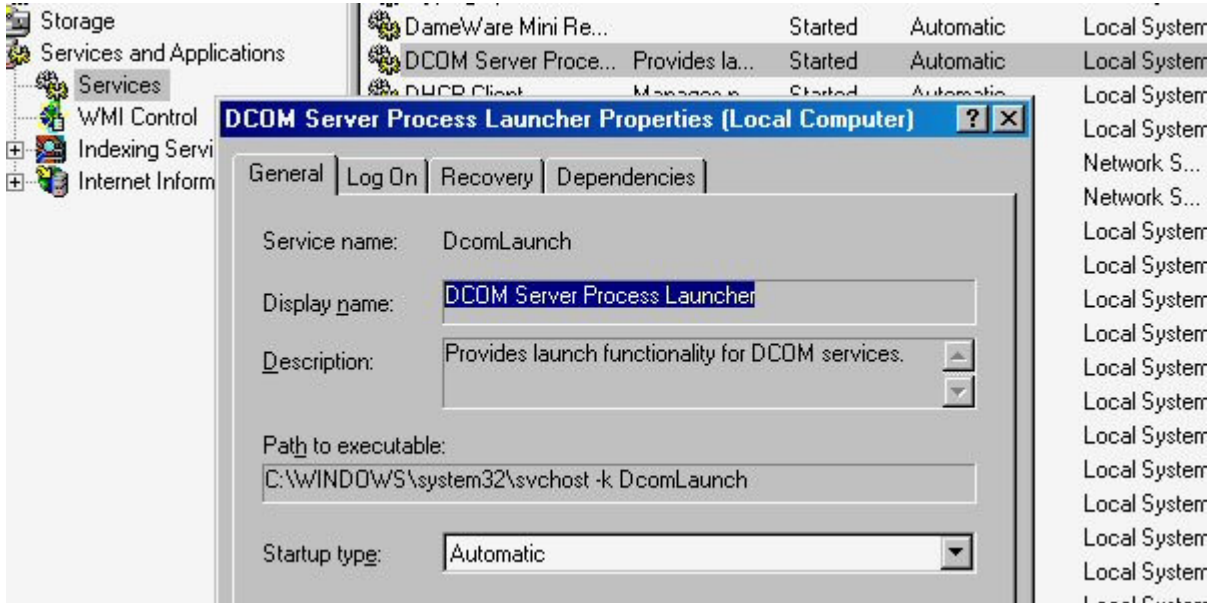
WMI Control, Window Management Instrumentation. This is a Microsoft Operating System application.

Indexing Service is a service that indexes your computer including but not limited to your hard drive and all the files, along with your local web site if installed.
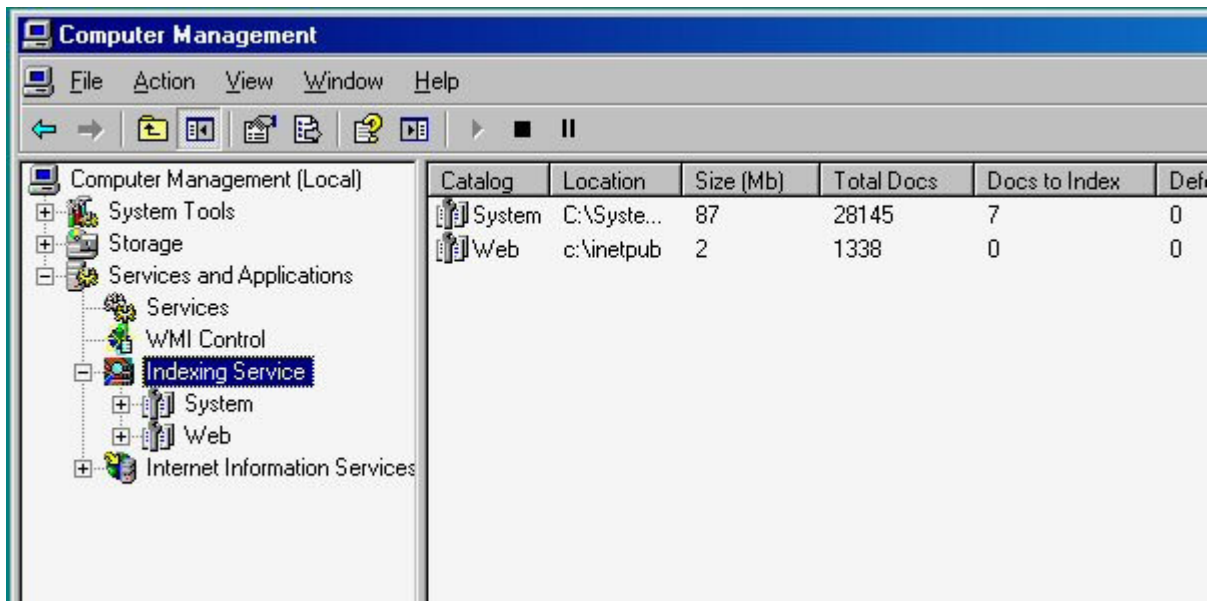
Internet Information Services, if you have the local Web Server installed this is where you would create local web sites, set up the properties of your local web site, stop, start, and restart.
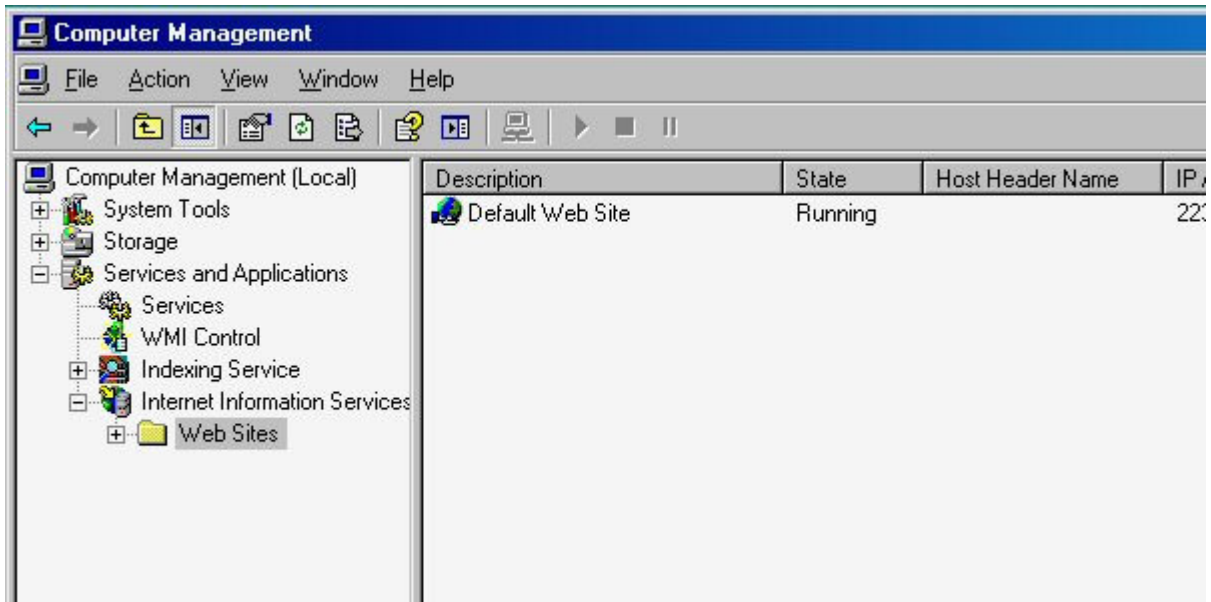

And one last thing, as with most [using this term loosely] Microsoft products putting the mouse pointer in some white space, and pressing F1 will bring up help.

Trouble shooting check lists

DIY-Computer-Repair can help!

To use the check list you read the problem, then run down the list until you fix the problem. This is called a fall through check list.

Safety First!

Check list for:

Audio

Basic Computer TS

Processor/CPU TS

Keyboard TS

Mouse

Mother Board

Memory

Modems

Networking

Power Supply

Processors

Storage

USB

Video

More useful pages:

How to.......

System Manager tutorial

Having a problem? I have answered technical questions at AllExperts, if you are having a
problem check out the answers there.

Audio Trouble shooting check list - page 1

DIY-Computer-Repair can help!

Audio problems range from extraneous noses (buzz, whine, etc) to no sound at all.

Noise:

For those problems that you have extraneous nose the problem is in the cable, the connection at the sound out port, or the connection on the speaker.

It could well be a cable has what is called a cold solder joint where part of the cable is not completely soldered to the connection.

Because these cables are very thin there are only a few strands of wire in them, excessive bending can break the wires, this could also cause the lack of or extraneous sound.

To find a bad connection gently move the cable back and forth at all connections, on the speaker and at the computer connection, does the sound stop and start?

If it does try a different cable or head set, has the problem gone away?

If not then it is a receptacle on the end that you are moving has failed. (in this case you may have to replace the speaker or the sound card)

 If the problems have been resolved then the cable has failed.

Lack of sound:

You can find out if your sound is working properly just by starting the system. With Windows you get the startup tune.

So lets say you haven't deleted the wav file that runs when you start Windows, but there isn't any sound when Windows starts.

Let's see if we can find the problem. Problems with sound range from a bad or no driver for the sound device to a bad sound device

Audio Trouble shooting check list - page2

DIY-Computer-Repair can help!

Check list:

First the hardware and driver, is it installed? With out even opening any programs you can tell if it is a hardware/driver problem by looking at the task bar: do you see the speaker by the clock?

Yes? then it maybe a hardware/driver problem.

No? then the hardware or driver is not installed.

Procedure:

Right click on My Computer, on the menu select Manage, drop down to Device Manager, click to open it.

Go to Sound, video and game controllers. Expand the menu by clicking on the + sign.

You should see at least four items or more. If you have less than four your hardware is not installed, look for your hardware name, i.e.: Creative labs, or SoundMax, or Turtle. After the manufacture name will be the version of the sound card, i.e.: PCI512, or Integrated Digital Audio, etc.

You have device installed:

Right click on the device name; go to properties, on the General tab two lines are of interest: In the "Device status:" "This device is working properly" and In the "Device usage:" "Use this device (enable)"

If these two items are ok then go to the Properties page, click on the Audio Devices, a new page will open; look at the three lines, one says: "Use audio features on this device" it should be checked.

If the other two are selected remove the checks and check "Use audio features on this device". Click apply, ok, then go to the speaker on the task bar and test the sound by changing the volume.

Fixed?

Yes? Done! *You did very well!* No?

Audio trouble shooting check list - page 3

DIY-Computer-Repair can help!

What about the driver?

Click on the Driver tab, this will list the driver installed for the device. You can look at the driver details, update the driver, roll back the driver, or uninstall the driver.

Click on the Driver Details, you are looking for a driver named *xxxaudio.sys*, where *xxx* represents the name assigned by the manufacture. Click on the driver, the file version under the window will give you the name of the provider, the file version, copy right, and the Digital Signer. We want the provider and file version to search for updates.

You have two choices:

You can uninstall the driver, restart your computer and let the OS find the device again.

You can uninstall the driver, go back to the Device Manager and right click on the right column and do a "Scan for new hardware"

Either one will reinstall the driver again, once the driver has reinstalled test the sound. The easiest way to check the sound is to go to the speaker on the task bar and open the volume control, change the volume. Do you have sound?

Yes? Done! *You did very good!!*

No?

Audio Trouble shooting check list - page 4

DIY-Computer-Repair can help!

Now you will have to make a decision:

Try a new driver **or call a tech**?

To try a new driver open the Audio Properties and go to the Driver tab, you know the name of the manufacture and the driver version.

Click on Update Driver, if you have an internet connection let the program search for the driver, it also has the name of the driver and version.

If a search for the driver fails you will have to go to the manufactures site and find the drive with the information from the Audio Properties.

After downloading the driver follow the installation instructions.

Once you have the new driver installed test the sound (see Device installed section for testing instructions).

Do you have sound?

Yes? Done! *You have done exceedingly well!!*

No?

You have a failed device.

You will have to replace the sound card (and disable the embedded audio device).

Audio Trouble shooting check list – page 5

DIY-Computer-Repair can help!

No device present:

You check the Sound, video and game controllers and there are only Codec drivers listed no hardware.

You know there is a sound device installed in the system, but the hardware is not being recognized by the Operating System.

When you start the system up one of the checks the OS will do is hardware scan, it detects all the devices in your computer.

With the Device Manager open right click on the name of your computer in the right column, a box will open that says: "Scan for Hardware Changes". Click on the button.

The system will scan for new or undetected hardware, this may or may not bring up your device.

If it brings up the "New hardware found" box then install the hardware, if not then you will have to get the drivers for your device and install them.

The drivers may come on a cd when you bought the computer or the device, or you may have to go to the manufacture's web site and down load the drivers.

Follow the installation procedure the manufacture provides with the drivers.

Do you have sound?

Yes!! Done! *Job well done!*

No?

You have a failed device.

Basic Troubleshooting of your computer

DIY-Computer-Repair can help!

Trouble shooting is an art, it is not an exact science.

Some experts will say that to trouble shoot a problem you have to have the education, training, and experience in the profession. Ummmm, no I don't think so. You can recognize a problem with your car, you air conditioning, the wife's washing machine, etc. You can tell if the impeller in the washing machine isn't turning, if it isn't turning it isn't agitating the clothes to clean them. So there is a problem between the motor and the impeller. You call an expert in washing machine repair and they fix it. Trouble shooting, you go through your day and do it all the time, trouble shooting is just problem resolving. The difference is that the problem resolving is with mechanical items not humans.

Trouble shooting (TS) is like a tree, at the top is the problem, each branch has a yes or a no. Yes will take you in one direction, a no will take you in another.

So you need a few tools in that TS tool box.

Where to begin?

Well first is common sense, then there is the logical sequence, then there is the actual dang! I figured it out! So follow the sequence of TS down the tree.

So common sense stuff:

The first question is: Did you change anything since the last time it was running?

No - go to **power problems.**

Yes - go to **installing devices.**

Power problems:

Is there power to the receptacle that the compute uses?

Is the computer plugged in? Both the receptacle and the computer power supply, remember that the power cord is removable from the computer.

We have power, did it start?

Yes - Done!

No - go to other problems

Installing devices, have you installed any new hardware?

Yes - go to installing new hardware.

No - go to power supply Trouble Shooting

Other problems:

If you have power and the computer powers up (the power led is glowing) but there is a lack of activity (i.e.: nothing on the screen) or you get a blinking cursor and nothing else then we move on to the No Start section.

No Start -

Or maybe you get the dreaded Blue Screen of Death (BSD) this is a diagnostic screen that Microsoft uses to tell you the general area of the problem that cause your computer to not start or crash.

BSD -

Or you see this "non system disk error" this could be a hard drive failure, a corrupt hard drive, or a virus infecting the hard drive.

HD failure -

These are the main problems you will run into, there are others that are caused by installing hardware or software. So with some common sense, a little logic, and a step by step sequence of events you can fix that computer!

Troubleshooting Keyboard Problems

DIY-Computer-Repair can help!

Keyboard problems range from not working to random key presses showing up when least expected, to locking up your computer.

Keyboard problems can occur with one of the following scenarios

Disconnecting and reconnecting the keyboard cable:

When you move your computer or work on it sometimes you have to disconnect the cables, reconnecting them in a tight space could cause the small pins inside the connector body to get bent. If you look at the pins and one is bent then you can use a retractable ball point pen to bend them back to the original position. Or use a pair of very thin needle nose pliers. Be careful with the amount of force you use to grip and bend the pins with you can squash the pin (they are hollow) or break it off.

Another problem that occurs when moving a computer is that the mouse and keyboard connectors are the same, but with different functions. Plugging the mouse into the keyboard port or keyboard into the mouse port will cause the keyboard and mouse to fail, it will not damage any thing, they just won't work.

Dropping:

Keyboards and mice are the most abused devices connected to your computer. They get the most human contact. I am not saying that we are malicious, just careless sometimes. The impact from dropping a keyboard may cause the key caps to come louse. If it drops say three feet to carpet the force of the impact may only loosen some key caps in this case with the power off on the computer press firmly on the cap to reseat it.. If it is a hard drop, say three feet to concrete you may as well replace it.

Spilling liquid on keyboard:

Electronic devices and liquids do not mix. Liquids spilled into a keyboard are no exception. If you spill you Pepsi or coffee on your keyboard you will have to replace it. The only exception is the newer sealed keyboards that have a plastic membrane over the keys sealing them from dirt and moisture. Even water will cause the keyboard to malfunction. The reason that water will cause the electronics to malfunctions is there are minerals in the water, it does not take much to cause a short in micro componets.

Dirt:

We rarely think of dirt getting into a component when it is inside a building. Well there is a lot of stuff floating in the air, even buildings with air conditioning. The filters can not take everything out of the air. The particles may be microscopic but they will build up over time. When dust settles on your keyboard it will migrate down inside and get between the key contacts and cause a short. You can keep this from happening by vacuuming your keyboard occasionally. Use a full size vacuum (those little battery powered vacuums don't have the power needed to pull the dust out of a keyboard) and a clean paint brush. Use the paint brush to get between the key caps and dislodge the dust, then with the vacuum head about one or two inches off the key caps vacuum up the dust, hair, and other foreign matter (if you put the vacuum cleaner nozzle directly over the key caps you will pull them off of the keyboard!).

Troubleshooting Motherboard problems

Diy-Computer-Repair can help!

Motherboard troubleshooting techniques

Troubleshooting a motherboard problem is like trouble shooting your car when it won't start. Is the battery dead, is it out of gas, is the spark getting to the spark plugs. See where I am going with this. Your problem could be any where from the power cord plugged into the wall socket all the way to the keyboard.

When you have a problem and have ruled out all the external devices [mouse, keyboard, commercial power, and monitor] then you start on the internal devices, hard drive, cd rom, floppy, video card, any installed auxiliary cards like the sound card, NIC, power supply, and so forth.

One indication that your motherboard is experiencing problems is when you power it up and goes straight into the BIOS setup. Some times you will get an error message about why it went into the BIOS setup, some times nothing but the setup screen. Another indication is with the newer motherboard one of the embedded devices has failed, you can press on and install a card to replace that device or if under warranty send it back to the manufacture for repair or replacement.

So what is your motherboard doing that is out of the ordinary? Not starting at all? Dumps to BIOS setup? Can't see the hard drive or cd rom? Mouse not working or intermittent? Keyboard not functioning? No sound from the embedded sound device? No network connectivity from the embedded NIC? Your USB will not connect on one or more ports?

Well let's see if you can fix that problem.

Before we run down the list did you get a POST error or beep code? If you did then go to the manufactures web site and look it up, this will be faster than trying to find the solution through this check list.

Question: Have you changed anything in the bios? Added any new cards? Removed any cards? Added memory? Upgrades of any kind?

If you have changed any thing from the bios to adding or removing cards then the problem is not your motherboard!

If you have not changed any thing then we know that the problem has something to do with hardware, let's assume that the power supply, mouse, keyboard, and video is good.

First go into BIOS, check the time and date [yup this is an indicator] if it has reverted to the default time [any time other than the current date and time will be the default] then your internal battery has died and needs to be replaced. You can set the time and date and reset all the BIOS settings but when you power the system down you will lose those settings and have to do it again when you power it back up. [This is assuming you have your computer connected to a power strip with surge protections and power everything down while not in use!]

If the BIOS settings are correct then we need to look at your problem.

Normal trouble shooting is to reseat all cable connections including power connectors, memory, cards, and the processor [use care while removing and reseating the processor!]. Problem still persisting?

If reseating everything did not cure your problem next disconnect all cables from your mother board, remove any cards with the exception of the video card, leave the power to the motherboard, the memory, and the processor. Did the problem go away?

Let's assume that your problems is not an embedded device [sound, nic, video, or usb] and it persists once you have the board stripped down to minimum support devices [mouse, keyboard, video card, and memory].

You are down to four possibilities:

- The processor is failing [over heated and intermittent].
- A memory module has failed.
- Something on the motherboard has burnt and is shorting out.
- A auxiliary wire [power led, hard drive activity led, reset button, or soft power button] has shorted out.

After checking the memory [if you have two or more memory modules try removing one if that doesn't swap them out] and the aux wires and the problem persists you will need a magnifying glass to look at all the ic's and wire traces on the motherboard looking for burnt areas or ic's.

If you have an IC or a trace that has burned through there isn't any you can do but buy a new motherboard.

Power Supply Trouble shooting check list

Diy-Computer-Repair can help!

Power problems:

To use the check list you read the problem, then run down the list until you fix the problem. This is called a fall through check list.

There are two types of power problems.

No power at outlet or no power at mother board.

You go to power up your system and you get nothing.

Probable causes are:

Power cord disconnected

No power at wall outlet or power strip off, may have a blown fuse or has failed.

Power supply has failed.

Steps:

Check power cord pulled loose from computer or electrical socket.
Good?

No power at wall outlet, check socket with another electrical device.
Good?

Power strip off? or has the built in circuit breaker popped?
Good?

(If the power strip circuit breaker is not the problem don't mess with the strip, purchase a new one, throw the old one away, cut the power strip power cord off, then someone else can't use it.)

Still no power?

The following check requires you to open your computer case.

Trace down the power connection from the power supply to the mother board. Check the

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connection to the mother board, disconnect it then reconnect it. Check the other power connectors to the hard drive and CD ROM.

Good?

No? [Power Supply has failed.](#)

Trouble shooting Processor Problems

DIY-Computer-Repair can help!

Trouble shooting processor problems is not an easy task.

CPU or processor problems can be related to other components such as video, memory, or a controller. Or it could be a support IC on the motherboard.

Scenario:

You start your computer and get the bios setup screen. You do not get any error on the screen just the processor parameters screen.

The main reason that the bios went to this screen is there is a problem with the clock speed of either the processor or the front side bus. Have you been over clocking your processor? If not then the have you changed the FSB speed for some reason?

If either of these questions are no, then you may have a processor about to fail. One way to find out is to open the case, remove the processor from the socket and then reinstall it, thus reseating the processor, reattach the heat sink. Power it back up, did it go into the bios setup for the processor?

If it goes back into the bios processor setup screen try lowering the clock speed multiplier and restart. If lowering the multiplier results in the system going back into the bios processor setup screen your processor is about to fail.

If it does not go back into the bios setup screen but starts then you may have cleared the problem, keep an eye on it, it still may be failing.

Another reason for this to happen is heat. If the processor is overheating because of lack of cooling air or over clocking it will go to the setup screen as a warning that the processor is running too hot. The thirmistior sensor on the motherboard will open the bios setup screen on restart.

Scenario:

You start your computer, it goes into a startup loop.

Note: There is a setting in some bios to have the bios display 'Advanced' settings on startup. When you select this parameter you will be able to see what the computer is doing during the initialization phase at startup.

You will see the actual clock speed of your processor and the memory count. This will increase the startup sequence by about ten seconds.

If the computer is in a loop because of the clock speed or a processor problem you will see the processor clock speed then the computer will restart. It is at this time you need to press the correct keys to get into the system bios. From there you can correct the clock speed for the processor.

Most processor problems will be:

A) Slow response when doing heavy computing tasks. Such as games, spread sheet calculations, graphics manipulations, viewing movies, copying large files.

B) Computer hangs for no apparent reason when light computer operations are occurring.

C) Computer dumps [crashes] frequently.

D) Write to disk fails frequently.

Note: These problems will also occur when a hard drive is full or is failing. Check the space on the hard drive before trouble shooting the processor.

You may also want to take into consideration the age of the processor and motherboard, is it time to upgrade?

How to build a custom pc

DIY-Computer-Repair can help!

Tired of computer shop Rip-Off Artists? Here's how you can build a custom pc for less!!

This is my project to buy the parts and build a custom pc.

This system is for my wife, she is not a "Computer Guru" by any means, all she knows is "I click on the Icon and it works." And if it doesn't' work I am in deep doo doo. She uses the system for email, Quicken for our finances, downloading all the vacation pictures, viewing pictures sent by various family members, and plays a solitaire game now and then. Her old system does have a Web cam for connecting to our family in the UK, but so far no one there has shown any interest in getting theirs setup.

So I need a system that will run email, quicken, solitaire, the web cam, and down load and view jpegs, mpegs.

I could buy her another system but I would be in the same position I am in now in three or four years, she has a Compaq Deskpro Mini Tower that is four years old, I have upgraded the processor to 1.8ghz, added a 40 gig hard drive and maxed the memory out to 784meg. I don't want to be in the proprietary dead end again so I will build a custom pc.

I have the project broken down in to four parts:

1) Research and purchase the components

2) Building the custom pc

3) Loading the OS and associated programs.

4) Making it faster..........

Lets get started!!

Part 1 - In the beginning

Part 2 - The fun part

Part 3 - Almost there

Part 4 - Performance optimization

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Also you may want to look at why build a custom Gaming PC?

Having a problem? I have answered technical questions at **AllExperts,** if you are having a problem check out the answers there.

Parameters of how to build a custom pc!

DIY-Computer-Repair can help!

How to build a custom pc!

The parameters of the project:

Budget: $1000

Time: 1 month

Project Parameters:

Desktop case, Motherboard that is upgradeable, P4 3 GHz processor, 1 gig of Ram, HiRes Video, 80+ Gig Hard drive, 4 or more usb ports, DVD drive, Audio, Wireless Network.

Specifications:

Case: Desktop, small form factor

Motherboard: has to have **expandability!**

Processor: P4 3GHz

Ram: 1 to 2 gig

Hard Drive: 80+ gig

DVD: Maybe a RW

Video: High Resolution with at least 256meg of ram

Network: Wireless

Parts list for building a custom pc

DIY-Computer-Repair can help!

Now that I have my project specifications I need to do the research for the parts I want to buy to build a custom pc .

Consider this:

A brand name pre-manufactured system will cost you from $599 to over $5000 depending on your specifications. What I am saving is the cost of labor, a little on the cost of shipping the components to me. But the biggest factor is the labor.

The parts list:

Item	Manufacture / PN	Cost
Case	Antec / CA-MINUET3	82.95
Motheboard	Asus / P5B-E LGA775	170.95
Hard Drive - SATA	Western Digital / HD-W1600YD	72.95
DVD	Asus / DRW-1608P2 / DVDRW	44.95
Ram	Kingston / KVR667D2D8F5 / 1G DDR2	132.95
Processor	Intel Pentium 4 3.0GHz / P4-630	70.95
Fans	Antec / PRO 80mm	8.95
Fan / Heatsink For Intel CPU	ARCTIC COOLING Alpine / FAN-ACALP7	10.95
Video	Sapphire ATI Radeon X1300XT 256MB	88.95
Keyboard/Mouse	Microsoft Wireless Laser Desktop 6000	58.95
Floppy Drive	Teac / 1.44MB 3.5in Ivory Floppy Drive	8.95
Total cost		752.45

The total cost of the system before shipping: $752.45

Updated - 05/16/07

DIY and SAVE!

DIY-Computer-Repair can help!

The name of the game is DIY and SAVE!

A pre-manufactured system with the same processor starts at $599, without the increase in ram, DVD RW, larger hard drive (160 gig hard drive, a little more than the 80 gig but will not have to upgrade for a long time), and 256meg of ram for the video. Upgrading the system to my specifications (I have the wireless keyboard and mouse already) with shipping and no rebates comes to around $753.

For $200 more I have a system that is not proprietary and has the same or higher quality components. You can add a three year warranty to the system and it will cost another $149. For the most part the warranty is a gamble, the manufacturer is gambling on your system not failing for three years. If you look at the parts price list the three year warranty will cover most items or part of the rest.

If you go with a lower speed or functionality processor you can lower the cost, also the cost of the motherboard and the ram, I would say by 50% for the three items, saving you about $400 overall.

I came in under budget, the wife will be pleased!!

I will not have to upgrade for three or four years, when I do if I can't find a processor or memory for the motherboard I can upgrade those only, the case is generic. If a part fails I can replace it, most of them for less than the warranty that a manufacturer would charge me, the name of the **game is DIY and SAVE!**

So Build a custom pc!

Inventory the components for the case

DIY-Computer-Repair can help!

Setting up the case

Once I get all my parts, **I need to compare the parts list I made to the parts I have on hand.**

1) Case

These items should come with the case:

Power supply and power cord

Template for the ports on the mother board (some cases have numerous templates because different manufactures have different layouts for the ports on the motherboard)

Hardware for mounting or securing the devices in the case.

2) Mother Board

These items will come with the mother board:

IDE drive cable (some have two cables)

SATA drive cable

Floppy drive cable

Installation Guide

3) Hard Drive

4) DVD Drive

5) Floppy Drive

6) Memory

7) Processor

8) Video Card

9) Extra fan(s)

Point # 1!!

ESD - *Your components come in a anti-static container. Ensure you are properly grounded BEFORE opening the container!!*

Let's Build a custom pc!

Installing the hard drive and components

DIY-Computer-Repair can help!

Mounting the hard drive and installing the other components.

Before we start assembling the components you may want to check the power supply for the correct cable connector for your hard drive. If you have a SATA hard drive the power connector is different from the normal hard drive. Look at the hard drive installation guide, it will show the power connector. Does the power supply have the same type of connector? You may have to buy an adaptor that goes from the old four pin connector to the new SATA power connector.

- Fist we want to look at the case, we need to look at how the components fit into the case. Some cases have a tray for the mother board that slides out making it easier to install the mother board, ram, processor, and any add on cards. The case should have hidden bays for the hard drive. The front panel will have the power, power-on LED, hard drive activity LED, openings for the floppy and cd/dvd rom(s).

- When we mount the hard drive, floppy, and cd/dvd drives we will not connect the power at this time, we want to have all the room we can to connect the controller cables first.

- Mounting the motherboard. The case or the tray the motherboard mounts to will either have raised stand-offs or small brass hexagon stand-offs to keep the mother board from shorting out on the case. You will have to attach the brass stand-offs to the case first, then set the mother board on the stand-offs, then secure with the correct screws. start all the screws, do not tighten them yet, insert the video card and any other add on cards you have in the mother board, this will align the mother board with the back of the case or tray. Now tighten the screws, be careful to **not over tighten them**, you may compress the mother board to the point where it will crack. ***Over tightening the screws will crack the mother board ruining it!***

- Once the mother board is mounted, there are three or four wires from the front case panel that you need to connect, the power and hard drive led cables, a reset cable (if attached) and sometimes a power cable.

- Next we connect the drive controller cables. If you have an IDE hard drive, you can use one cable to connect the hard drive and the cd/dvd rom drive, (if you do use one cable be sure to set the master/slave jumpers on the two drives). If you are using two cables, one for each device, be sure that if the hard drive is IDE that it is connected to the Primary IDE connector on the mother board (if you don't the hard drive will not boot). If it is a SATA drive, be sure to connect it to the Primary SATA controller connector. Connect the CD/DVD ROM Drive cable. Connect the floppy drive cable. Now we connect the power connectors depending on the lay out of the case it may be easier to connect the power to the mother board fist, then the drives.

- Next insert the ram, look at the pin edge of the ram, you will notice some slots in the module, DIMM modules have two slots, DDR has one. The DDR module slot is not half way on the module it is off set, this keeps from inserting the module the wrong way, same with the DIMM slots. Move the locking tabs on the socket outward, orientated in the correct direction, insert the module and press on both ends at the same time, you should see the locks move inward on the module and hear a "click" when they lock into place.

Installing the Processor

DIY-Computer-Repair can help!

Installing the processor and heat sink!

Next is the processor. Before you install the processor you need to have some **heat sink compound or grease** that goes between the processor and the heat sink. Check the processor and heat sink, there may be a small plastic tube of heat sink compound or conducting-gel, if not you can buy some at your local electronics store. If the heat sink is already attached to the processor do not remove it, you will not need the heat sink compound.

- **Look at the socket on the motherboard**, there is a lever on the side, lifting this lever will move the locking mechanism to the open position. The socket is made so the processor will only fit one way. There are markings on the processor and the socket to indicate the #1 pin orientation. Some processors have a little triangle, some have a small dot: it may be black paint or an indentation in the metal cover. The socket will have a place where there are no pin holes in one corner. It may have a painted black dot also.

- **Carefully lower the processor into the socket**, if it does not drop into the pin holes on the first try you can try moving it around very gently (the pins on the processor are very thin and coated with gold, they are not very strong individually and will bend or break easily). If it still doesn't drop into the holes take it back out and check the #1 pin orientation. If you have it orientated correctly and it will not drop in check the lever on the socket, close it and open it, the socket may not be completely unlocked. If it still will not drop in without force, look at the pins on the processor, you may have to use a magnifying glass to see the pins. See if any or bent. If you have a bent pin you can very gently straighten it with a pair of needle nose pliers or retractable ball point pen with the cartridge retracted.

- **Once the processor has dropped into the socket,** move the lever downward, some sockets will "click" when they lock, press the lever into the locking tabs.

- **The processor should come with a heat sink** and fan (check the installation guide for the heat sink and fan on how to install them), apply the heat sink compound, then the heat sink and fan. Connect the fan cable to the motherboard connector.

Cooling - install any extra fans

DIY-Computer-Repair can help!

For cooling, we now install any extra fans we purchased!

Prior to installing your cards a couple of considerations.

For maximum cooling you should leave as much space as possible between cards, one slot or more this is especially important for the newer video cards with the newer MDAC which is a processor. Some will have a small fan with a heat sink to help keep the MDAC cool. Because they run at a higher frequency than the older video cards. This is also true for the newer sound cards. Keeping open space around these cards increases the cooling from the air circulating in the computer case.

Speaking of cases, some of the case slots are not completely punched out, you may have to pry them one direction and then work them back and forth to break the metal that didn't get completely cut during manufacturing. Be careful with these cases because the manufacture did not clean up the edges and they are razor sharp. A small file to round off the edges would be a good idea, you never know when you may have to put your hand inside the case. (If you do round off the edges use a vacuum cleaner to **get the metal filings out before** you power the system up!).

When you install your cards you need to seat them, I always put the slot cover into the slot then slide the card down until it is setting in the slot, be careful that you don't push the card into the slot at an angle you could damage the card, the slot retainer, or both.

Install your add on cards, video, etc...

Now we install any extra fans we purchased. The fans come in two types, those controlled by the motherboard and those connected to the power supply. Install your extra fans. Most motherboards come with an instruction manual that will give the motherboard layout, the connections will be noted on the 'map' or drawing of the motherboard. Some motherboards have labels such as 'Fan 1', 'Fan 2', etc.

Before we power up we need to check our work:

Check all the cable connections, drives, power, case connections, all secure?

Last check, nothing in the fans? No extra screws or hard ware? No tools inside the case?

Put the cover on the case, this will preclude you from touching anything while the

system is powered up!

Ok.

But first: **check the installation guide for the motherboard, you need to know the key sequence to get to the bios screen** to set the time and date, drive types for the hard drive and cd/dvd. There are other settings you can make in the bios also. Those take some extra research and study before changing them!

Connect up your keyboard, mouse, and video. (turn on the monitor!)

Power up!

See the bios listing, CPU Speed, and memory count?

Press the key sequence to get to the bios.

Set your drives, time and date, any other parameters that you feel comfortable setting.

Let the system boot.

Did the light on the floppy (if installed) and cd/dvd drives light up?

If you have a new drive that is not formatted and has an OS installed you should get a "non system disk" error.

All good?

If you don't have any problems you are ready to install the OS and play.

If you don't get a bios logo screen then something is not seated properly or has gone to ground. Disconnect the power cord! Then troubleshoot your installation.

Installing the Operating System

DIY-Computer-Repair can help!

Installing the Operating System and additional programs.

Your hard drive is brand new, it is considered a "raw drive", it does not have any partitions for volumes.

The steps:

You need a **bootable disk**, be it a floppy or a cd. We will go the easy route and use the installation CD to create the OS partition, format it, and install the OS at one time.

Steps:

Insert your OS cd, I will be using XP. The system will start and OS will load to the welcoming screen. Follow through to the point of the install directory, there the program will tell you that you do not have any drives partitioned.

The program will take you to the partitioning menu. If you have more than one physical drive in your system it will show them as Drive 0, Drive 1, etc. You need to select the drive 0. next it will show you the maximum size for the partition, I would suggest that you split the drive into more than one partition (this will be explained later) and make the size of your OS partition (called the system partition) a minimum of 15 gig, if you have a fairly large drive you should give the OS as much room as you can; thirty gig for the OS is not unreasonable for an OS now days.

After you create your system partition do not make any more partitions, I will explain why later.

Next the program will format the system volume and load the software it needs for the rest of the installation. Once it is compete it will restart. After restart you will need the cd key for the OS. If you have a network and use static IP's you will need the network parameters for your network.

After restart, complete the installation interview, go get a coke or eat lunch; it will take almost an hour even on the fastest systems I have loaded XP on.

Installation complete and you are at the Welcome to Windows XP screen. Continue through the basic user setup, when complete you can customize your system. Change how the background looks **(did you know it takes almost 40% of the computing power of your computer to run a pretty background?)**, setup the network, setup your printer,

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change the screen resolution, change the default power settings (XP knows you have a desktop, why does it want to power it down in **15 minutes???**).

Partition the rest of the hard drive

DIY-Computer-Repair can help!

Now I get to tell you why you don't want the setup program to create more than one partition:

When you create partitions from the setup program, you are really in DOS, not a 32 bit OS (like NT or 2000, or XP). DOS can only create one primary partition, any other partitions are called extended partitions. The drawback on using extended partitions is that you can only have one, and you can only have four volumes. Lets say you have a 250 gig hard drive, your OS is the primary partition, you set it for 30 gig, this leaves you with 220 gig of open space, now a lot of stuff can get lost in that much space (really - think about it..........) so you say how would I organize that much space? Break it down into smaller chunks. You use the **storage manager** to create partitions and volumes.

Using **system manager** go to drive management. You will see two drives - your OS drive and your CD/DVD (unless you put in another drive that has already been partitioned and formatted).

You will also see a block, it will have a label on it that indicates it has not been partitioned. You can partition it as one drive or you can make a bunch of smaller drives. You should consider how you want to organize your data.

With a 220 gig drive I would divide it up into three smaller partitions, two eighty and one sixty gig partition. One for media (video clips and dvd's eat a lot of space), one for your personal data like finical and documents, and the last can be miscellaneous stuff.

If you right click on the white space of the drive you will get a small menu, you select create a partition, select Primary for all partitions, do not fall into the extended partition trap. (if you go with extended and add another hard drive to your system at a later date you may not have any volumes open to add the drive to the OS!)

After you set the size of the partition, then the drive letter, a format menu will open, you can take the standard format or quick format. The standard format will take some time, fifteen minutes to hours depending on the size of the partition, I use the quick format most of the time unless I have a drive that has had problems in the past. *Be sure to run the utility to check the drive for errors, it is located under the properties on the tools tab, it will be faster now than later with a lot of data on the volume.*

Once the format is complete you are ready to use the drive, for any more open space just repeat the above steps for each partition you want to create. (Don't forget to run the **Defragmenter** once a month to keep your drive at optimum operating speed!)
You now need to go to Performance optimization.

Performance optimization

DIY-Computer-Repair can help!

Performance optimization

By setting different parameters you can get a performance boost.

1) The swap file: the system swap file should be at a minimum the size of the physical memory in your computer. At a max it should be 1.5 times the physical memory, because of limitations of the OS you should not exceed 2 gig per swap file. If you have three gig of memory in your computer you would have to spread the swap file across two drives at 1.5 gig or three drives at 1 gig. You will see an immediate change in the way the system acts if you move the swap file off of the system drive. This is one of the reasons for partitioning your hard drive into more than one partition. **(*Some manufactures that load an operating system on their computers for the customers only create one very large partition, this is really a disadvantage to the buyer because the system is not operating at it's highest potential.*)** So how do I move the swap file?

Right click on My Computer, in the menu select properties, click on the Advanced tab, under performance click on the Settings button.

Go to the Advanced tab, go down to the change button, if you look above the button you will see the "Total paging file for all drives:" and some number, chances are it is almost or equal to the open space on your OS drive. Click on Change, you will see all of your drives listed. What you want to do is select the drive you want to move the file to, normally D:, highlight the drive you want to use, click the "custom size" radio button, in the "Initial size (MB):" type in the size of your physical memory.

In the "Maximum size (MB):" type in the 1.5 times the physical memory unless it exceeds 2 gig, if it exceeds 2 gig then enter 2 gig and create another swap file on another drive. When you are complete reduce the size or remove the swap file from the C: drive.

Note: You can run without a swap file on the C: drive if you want, the OS will complain about not having a swap file incase of a failure: "No room on C: drive for a memory dump in case of failure". The memory dump is a file that Microsoft would use to help you fix your OS if you called support, the minimum size of a swap file on the OS partition is 400 meg, just remember that the OS will use this small swap file first so your optimization is being dragged down by the small file on C:.

2) Another way to increase your overall system performance is to remove any of the visual effects that are loaded with the OS. One way is to remove the themes background, by setting the back ground to a plain solid color you reduce the work the processor has to do to keep it pretty. It takes about **40% of the processor computing power** to display all

that visual distraction; it also slows down your video cards performance. So how do I set the visual effects?

Performance optimization - Visual effects

DIY-Computer-Repair can help!

Performance optimization

There are two areas where the visual effects are set, one is the background the other is appearance of the icons, task bars, and tool bars.

A) Icon, task bars, and tool bars are controlled through the system properties same as the swap file. On the "Performance Options" page you will see a tab called "Visual Effects". You have four options, the best one is "adjust for best performance", you can select "Custom:" then go down the list and remove all the check boxes, maybe leave a couple checked because you like the feature.

B) The background color scheme is controlled by the display settings in the Control Panel. there are five tabs, "Themes", "Desktop". "Screen Saver" "Appearance", and "Settings".

1) Themes - This is the bane of any system admin that has to put up with "**My Computer is too SLOW!**" complaint. The end user will not let you change it, the simplest way to get around this is to delete them when you load the system (oopps, giving away trade secrets.....) any way this is where you get rid of the Microsoft hills and valleys.

2) Desktop - you can set background, there are some already created or you can make a customized desktop. This is where you see those company logos in the background......

3) Screen Saver - If you have small children or work in an office it is important to *set the screen saver and have it password protected*. Ten minutes is a company standard time-out, you don't always remember to lock your computer. A small child typing on the keyboard or clicking the mouse can cause a lot of havoc. I know a guy that lost a large amount of data because he didn't lock his system, his little boy had a field day on the computer.

4) Appearance - lots of options here! the main one is under effects:

a) "**Use the following transition effects**........." I remove this one for sure

b) "**Use the following method to smooth**......." Turn off and if you see jagged edges on your fonts or Icons turn it back on, minimal performance loss.

c) All the rest I turn off, unless you need "BIG" icons or shadows, etc.

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5) Settings - This is for screen resolution and colors. If you set up your computer on the same monitor you use daily this should already be at optimum. You can increase your colors or resolution, be careful you may get the "***Resolution out of range***" error.

For more tips see the How to… chapter

Laptops - Care and Repair

DIY-Computer-Repair can help!

For some friends until I get my laptop web site setup, a little of what I know about laptops or notebooks.

Now this is going to make some people mad, I only have owned two brands of laptops. IBM and Compaq. So most of my information and experience will be from the IBM. Each page will give some instructions on how to do the task, or information on the subject of the page. Most of the information will apply to all laptops but in some cases it may be product specific, as a technician you do not always get to work on all makes and models. The company I worked for over the last ten years was an IBM and Dell shop as far as laptops were concerned and the IBM ThinkPad was the computer of choice due to the warranty that IBM has for larger business.

Page resources are:

Batteries

Case

Keyboards

Memory

Processors

Hard drives

CD/DVD ROM Drives

Power supplies

Touch pads / pointer / mouse

Video / Plasma screens Repairing

Video / Plasma screens Cleaning

Having a problem? I have answered technical questions at AllExperts, if you are having a problem check out the answers there.

Laptops - Batteries

DIY-Computer-Repair can help!

Laptop Batteries:

There is a myth that if you take your battery out of the laptop while you have it plugged into AC with the adapter for long periods of time it will last longer. Sorry not true, I will explain further down the page.

There is another myth that if you take the battery out when plugged into AC for long periods of time and then put it back in once a month for a recharge it will last longer. Sorry not true either.

The truth is that once the battery is charged it will began to degrade, that is to say that after the initial charge the battery will never charge to it's full potential again. Most manufactures will tell you this if you read their product information. When you buy a battery and the manufacture says it will last x hours the manufacture is giving you a ball park figure. The battery at first will last longer by fifteen to thirty minutes, then slowly drop down until you decide to buy a new one.

I have a IBM T30 that I use on a everyday basis, the battery when brand new would last almost 3 hours. I know it lasted that long I took it on a overseas flight to the UK when the battery was brand new and played some games on it until the battery died.

To understand why your battery will degrade after the initial charge you have to understand how the battery is made and how it is charged.

The battery that you take out of the laptop is really a pack of smaller batteries in a plastic case. Depending on the manufacture there can be anywhere from six to twelve or more batteries in the pack. Each battery is a 1.5 volt Li-Ion or Ni Cad battery. The better type of battery is Li-Ion. If you look at the battery pack it will say something to the effect that the pack will supply x volts at x AH (Ampere Hours). If you want to know how many batteries are in the pack divide the x number by 1.5 and you will get the total.

On newer laptops the charger is built into the laptop, it is part of the power supply. The charger will do what is called a trickle charge, it does not apply a lot of voltage and amperage to the battery, just a small amount. In the battery pack there is a small board that controls how fast the battery is charged and discharged, this makes the battery last longer.

The myths:

When you discharge a Li-Ion or Ni Cad battery you do not completely discharge the battery, it takes a special device to discharge these batteries, called a zapper. So think of your battery as a glass of milk, you drink part of the milk, you can see a ring where the glass was full down to where you stopped drinking, a milk ring, after you are done with the glass of milk depending on how many times you sipped out of the glass you will see some milk rings. Now lets use this analogy and say instead of sipping the milk it is the length and number of times you have powered up you laptop and then recharged the battery. If you do not let the battery discharge completely - to the low battery warning beep - when you plug it into to AC the battery will start charging at that point. The first milk ring. This phoneme is called battery memory, each time you use the laptop on battery and then plug it in to AC power it builds up memory until the length of time the battery will last gets shorter and shorter.

The next myth is if you keep the battery out of the computer and recharge it once a month. This will cause the battery to build memory faster. The battery will have a charge already. If you do not discharge the battery to it's lowest potential before you recharge it the memory build up will start where the battery was discharged to. In other words the battery will over time discharge by it self. If you charge your battery then take it out the laptop for a month and don't complete the discharge the memory build up will start where the battery has a charge at.

If you have a laptop and know you are going to use it on AC for most of its life (like my T30, it is my primary business computer) then discharging the battery as far as it will go then removing it before plugging the laptop in to AC will extend the life of the battery. You will just have to remember to charge the battery before you head out with the laptop.

We just have to live with the fact that a laptop battery will only last for a certain length of time then buy a new one and try to not let the new one build up memory.

One last word of caution, one of my friends pointed out to me that his battery would not hold a charge and it is still in the laptop. This is not a good idea because it could over heat and short out, if it did not cause a fire it surly will damage the computer and the power supply. Another thing to consider about laptops being used as a desktop for long periods of time is that once the battery reaches it's full charge then the power supply has to do a trickle charge while it is installed.

My recommendation: discharge the battery to its lowest point then remove it and store it until you are going to use the laptop on battery only then charge it. Now this is not a very good plan for those 'power out' emergencies which no one can predict but it will save the battery and the power it takes to keep it charged.

Resources:

IBM/Lenovo ThinkPad's Support this is the start page, you will need the product number or model number.

Compaq/HP Support this is the start page, you will need the product number or model number.

Dell Support this is the start page, choose your laptop to continue.

You will also find items like carrying cases, docking stations, and batteries here:

eBay In the right had column enter your search term.

Laptop Case

DIY-Computer-Repair can help!

Laptop Case:

A laptop case isn't like a normal computer case, opening one can be an adventure.
Having worked on Compaq, Dell, HP, and IBM laptops all the cases are opened
differently and are all *difficult to crack*.

Disassembly of a laptop or to take apart laptop computer case unfortunately is a time
consuming process, and **you must exercise caution when opening the case or you may
have to replace the broken parts of the case**. Most have screws located under the
battery, keyboard, and in the hard drive bay. In addition if you have to remove the video
screen you will have to be extremely careful to not tear the ribbon cable for the screen.

The laptops I am most familiar with are the IBM ThinkPad series. Some of these
procedures apply to other laptops.

You will need a lot of open space and a container for small screws and parts. A magnet or
magnetic screw driver is useful for getting the small screws out of recess or wells that the
screws drop into. Another tool that is very use full is a thin plastic putty knife (I will tell
you why shortly). If you have an exacto knife you can use it to remove the little covers
over some of the screws, these little plastic covers are coated with an adhesive on the
back to keep them in place, I put them on a piece of paper with just enough force to keep
them from falling off. This will keep the adhesive intact for replacing them when you put
you computer back together.

Once you have all the screws out of the case, take your plastic putty knife and find a spot
where you can insert it in between the bottom and top halves of the case, gently work it
along to 'crack' the case apart. To keep it from closing you can put a flat head screw
drivers in strategic points to keep the case from closing back up.

Now that you have it open you can proceed with your repair/replacement.

Laptop CD and DVD drives

DIY-Computer-Repair can help!

Laptop CD drives and dvd drives how to...

Laptop CD drives and dvd drives are no different than their counterpart drives in a desktop. **Because of the need to save space in the laptop they are thinner but retain the same functionality of the desktop version.** I am not saying that they will have all the features of the desktop drive, but they will read and write a cd or dvd. I have not seen any Dual Layer drives for a laptop as of yet, you can expect them to be on the market soon.

As with a desktop cd/dvd to make it function to it's fullest you need the correct drivers. This includes the hardware drivers and the video drivers. Hardware drivers that the manufacture supplies and software drivers that a program will require. Then there are additional drivers called Codec that some video programs require that are not installed until you need them. **These codec's can be a pain to find.** *Before you go on the road and lose you internet connection try all your programs, read and write to the cd/dvd, watch a movie, watch an avi, mpeg, listen to some music.* Better to do it now than to be on an aircraft over the Pacific with out the necessary drivers to watch that move you bought just for the trip! Another program you may have and need to test before you hit the road is a cd/dvd burning program. You don't want to get to your work/vacation site and need to burn a cd/dvd and it not work!

The cd/dvd drive is one of the components that you can stop and remove while the computer is powered up, just like a USB flash drive. Same principle. You can use the icon **(Safely Remove Hardware)** in the tray next to the clock to stop it. Why would you want to stop and remove the drive? Maybe you have a floppy drive for the bay instead of a usb floppy (some laptops still come with them) instead of powering down your computer to change to the floppy you can stop the cd/dvd, pop it out and insert the floppy drive, the hardware and OS will see the floppy then you can use it. Or vice versa you have the floppy in the bay, stop it, remove it, install the cd/dvd drive.

These devices do fail on occasion, not often enough to trouble shoot. If it will not stay closed, or will not read three or four different cd or dvd's then the drive has failed. **They are not repairable,** if the system is still under warranty contact the manufacture for a replacement. Different manufactures have different policies about replacement they may or may not replace it for free and may require the old one back so don't take it out and throw it away until you have the new one.

Last note: *I do not recommend you clean the reader head with anything besides Isopropyl alcohol and a Qtip. If you use a Qtip insure you have the type that will not*

leave any stray strands of cotton on the head, one strand that you can not see will render the drive inoperable.

Laptop Hard drives

DIY-Computer-Repair can help!

Laptop Hard drives, storage, IDE and SATA drives.

One of the most common failures in a laptop is the hard drive, it is also one of the few components you can upgrade. Laptop hard drives fail more often than desktop hard drives. Reason: simple your laptop absorbs more punishment than a desktop. You move your laptop continuously, where you go the laptop goes. I know you are careful with how you handle it but still it gets banged around.

So what can you do about the constant shock the hard drive gets on a daily basis? Not much, be more aware that the hard drive has your data and **back it up often**. Maybe make an **image of the hard drive**.

Laptop hard drives are located in a bay in the laptop, Most have some shock resistance built into the bay. Some hard drives are easier to remove and replace than others. I have seen some hard drives under the keyboard, completely inside the case where you have to take the case apart to get to the hard drive. You will have to go to the manufactures web site and do a search for your computer if the documentation that came with it doesn't show you where and how to remove the hard drive. Acer's are one of the 'no documentation' type of computers, all the manuals are ON the hard drive, what do you do if it has failed?

Once you have located the hard drive and understand how to remove it you just reverse the procedure to reinstall the replacement.

A word of caution: ESD will damage the hard drive the same as dropping it!

One thing I would suggest you do is to make a couple of images of your hard drive partitions. If you have a hard drive failure all your data will be lost, with an image of the OS partition and the data partitions (if your installer had the foresight to make two partitions on the hard drive) and a good back up, the failure of a hard drive will not be as catastrophic. At one time when you sent a computer into IBM for repair they would wipe the hard drive and reinstall the OS, IBM has since sold off most of their laptop business so I don't know it this is still true. To save reinstalling all of your programs, finding those pesky cd's and keys you could restore your computer at least to the point of the image and then complete the restore with the backup.

In conclusion the hard drive is fairly easy to remove and reinstall, you need to be aware that it is the most vulnerable component in your laptop. Your data is the most important thing on the laptop back it up regularly. *Make an*

image of the hard drive, if you have important or hard to find programs you will always have a copy of them, also you will not have to reinstall them if you have to replace or upgrade the hard drive.

Repairing laptop Keyboard

DIY-Computer-Repair can help!

Repair and cleaning of a Laptop Keyboard

Two devices on the laptop get the most use and abuse are the Video Screen and the Keyboard.

Repair -

The keyboard gets a good workout every time you use the computer. Like all keyboards it is prone to collect dust, dirt, and other objects. **Most keyboards fail from use not abuse.** Some times you see the lettering worn off the keys, sometimes a key will pop off the underling support. Then there is the very thin ribbon cable, because it is very thin mylar (plastic) film with the copper traces embedded between the layers it will degrade with heat. Along with this the connectors are also plastic and are very thin these also degrade with heat over time.

I will not list the trouble shooting techniques here, if the keyboard is giving you problems it has failed. Unfortunately there is very little or no repair for the keyboard. Even the laptop manufactures realize this, they do not require the old keyboard back when it is replaced under warranty.

To replace the keyboard you will need either a small cross point (Phillips) screw driver, a #1 or a small hex driver (some have Allen wrench) Compaq/HP uses a T8 hex. You do not have to disassemble the complete case to get the keyboard out. Most of the laptops I have worked on have screws that go through the case to the underside of the keyboard. Turn the computer upside down and remove the screws from the vicinity of the keyboard. Depending on the make any where from five to ten screws.

Once you have the screws out, turn the computer over and open the video display, 90 to 120 degrees to get it out of the way. Using a small flat tip (common) screw driver lift the keyboard slightly from the front of the keyboard. Some keyboards have small tabs that insert into slots on the video side of the case. Lift the keyboard about 2 or 3 inches. *Look inside and find the ribbon cable, you need to know how much cable you have loose before you lift the keyboard all the way out of the case*. Because the keyboard has failed we really don't care about the ribbon cable on the keyboard but do care about damaging the connector on the motherboard, so use caution when lifting the keyboard. Check to see if the ribbon cable is held in place by any cable keepers, if so you will need to open them before lifting the keyboard out. Once you are sure you have cleared the ribbon cable you can lift the keyboard out and disconnect the ribbon cable. **A word of caution:** Some ribbon cable connectors have a lock on them to keep them from working loose over time. If you don't see or know how they work look at your replacement keyboard's ribbon cable

connector. Now that you have it apart all you have to do is reverse the disassembly procedure to put it back together.

Once you have it assembled, test it.

Cleaning the keyboard -

To clean the keyboard you would treat it the same as a normal keyboard. I would suggest you power the computer down before starting, you don't know what those stray key press will do when you aren't looking at the screen.

I usually use a small stiff paint brush and a vacuum or canned air to clean out the dust and dirt. If you use a vacuum cleaner to suck out the dirt and dust don't put the nozzle on the keys, good way to lose a couple of keys, they **will** get sucked up the hose. Using the paint brush try to move the dirt/dust to the center of the keyboard. This will enable you to get under the keys and have it all in one place to vacuum it out. If you use canned air, open the computer as normal and turn it on its edge, brush/blow the dust/dirt down the keyboard.

You can use a glass cleaner to clean the grime off of the keyboard. As with the video spray the cleaner on the cloth. I don't recommend a paper towel because it will disintegrate and leave pieces of paper in the keyboard. Leave the computer off for ten minutes or so to let any excessive glass cleaner evaporate.

Enjoy your clean keyboard!

Touch pads, pointer, or mouse

DIY-Computer-Repair can help!

Touch pads, pointer, or mouse for your laptop.

Most laptops come with a built in pointing device (yes there are some that don't but that is not our concern they are fairly old). Your computer may have two of the three, a touch pad, a pointer (some people call them erasers - they look like a pencil eraser!) or a mini-joy stick (which it really is).

As for a mouse they are an external device that you attach to a port on the exterior of the computer. The port may be a true mouse/keyboard port (more on this later) or USB.

Touch pad, the touch pad is a material that is conductive sensitive. By conductive sensitive I mean that your body is conductive, the pad is sensitive to the conduction your body creates. To be non-technical, when you touch the pad or move your finger across the pad the pointer on the screen moves. Magic.

The pointer or mini-joy stick in the keyboard also moves the pointer on the screen in the direction you push it. More Magic.

There is good news and bad news about these devices, good news is they seldom break or fail. Bad news is that if the mini-joy stick in the keyboard fails you have to replace the keyboard. If the touch pad fails sometimes it is only the touch pad that has to be replaced, but I have seen keyboards with the touchpad attached. So be prepared to buy a keyboard and if you only have to buy a touch pad you save some money.

To replace the mini-joy stick or touch pad you would use the **keyboard** page for disassembly instructions.

Mouse, you can attach an external mouse to your computer if the touch pad or mini-joy stick is uncomfortable or you don't like the way it is setup. (I have two mice I carry with my laptop, wired and wireless. Wired for on an aircraft, wireless for any other place). Older laptops had a port that was both keyboard and mouse connections, it was wired to accept either device, you can still find the little 'Y' cable that you plug into the keyboard/mouse port then plug in the keyboard to one connector and the mouse to the other, neat. Newer computers use USB for the mouse so you will have to buy a USB mouse to connect an external mouse to your laptop. Be aware that *Wireless mice are NOT useable on an aircraft because they use a radio frequency that interferes with the Aircraft electronics.*

Upgrading laptop Memory

DIY-Computer-Repair can help!

RAM, DRAM, DIMM, SO-DRAM, DDR, DDR2 are all memory components.

Which will yours have? Unknown, manufactures are always improving their products, laptop manufactures are no different. If the manual that came with the laptop doesn't have the memory type and part number in it you can go to the manufactures web site and find the information by searching with the model number. Another way to do it is to go to one of the most use full web sites for memory that I know Kingston. You put in your computer make and model and vola' you have the type of ram installed in your computer, you also get a list of upgrades compatible to your computer, neat!

So you suspect that you are having a problem with the memory in the laptop. It is very slow, you get an error when it starts, it crashes or locks up frequently, and you have narrowed the cause down to a memory module.

How to find the memory, this to is an unknown. The memory modules could be: under the keyboard (yup IBM, Dell, and Acer do this), under the hard drive (Arcer), in a very logical place under a small panel on the bottom side of the computer.

Cautions:

A) Ram is static sensitive read my **Safety** page before opening computer.

B) *The modules are manufactured as to go into the slot one way, do not force the module into the slot* (seen that, not pretty and not cheap), *if it doesn't slide into the slot turn it around.* If it still doesn't fit you have the wrong module return it for the correct one.

C) *Laptop ram is power specific.*

Case in point: A college (a guy I worked with) had two laptops; same make, same model but different **revisions**. One was a little under a year older. The newer one had a failed motherboard and was being returned to the manufacture for repair. My collogue decided to take the 512 meg module from the newer computer and put it in the older computer. Not checking the web site for compatibility he fried the memory module and the motherboard. Now he has two dead systems.

So research will save you some $$$ and grief.

Repairing laptop Power supplies

DIY-Computer-Repair can help!

Laptop Power supplies and power adapters.

Where to begin? **Well the Laptop Power supply is inside the computer, the power adapter is connected from the AC to the computer. Fooled you. You thought the little black box that had the AC cord was the power supply!** For those that know go on down the page. It works like this: Because a laptop is considered a device that is 'Global' the first manufactures needed to come up with a way to get 110 to 220 volt AC to the laptop. Solution: create a device that only reduces the AC to 20 - 12 volts DC with an amperage high enough to drive the Power Supply inside the laptop where it converts the voltage to DC with the +5, -5, +12, and -12 volts that the components of the computer need to operate. Cool huh? Those guys thought it out and now if you travel to some far off place and they have Electricity you can use your laptop and charge the battery for those places that don't!

Note: Do not take these voltages/amperages as gospel, check you own system to find out what can and *CAN NOT* be used!

So now you know that you have a device that will reduce voltage and amperage to a safe level for you laptop.

Some things to know about laptop power supplies:

1) They will fail with time. Nothing lasts for ever, even stars burn out.

2) On **battery** the power supply will not produce enough power for some external USB devices, sorry the battery can only supply so much.

3) My experience is that the power adapter will fail long before the power supply, may want to get a spare and store it. When the original fails there may not be any left to buy.

4) When a battery will not charge anymore it is 99% the battery and not the power supply. If you have two batteries and neither will charge then it is your power supply in the computer.

5) When the computer starts to age the battery does too, it will not hold a charge as long as it did when it was new, see my battery page for more info.

6) Your power supply is a marvel of engineering, it either works or it doesn't and when it fails replace it. Now replacing a power supply in a laptop can be a easy task or a nightmare, it depends on the computer. I have changed out a Compaq power supply in

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less than an hour, then again the last Toshiba I power supply I changed took me half a day. Depends on the manufacturer. You will have to at a minimum open the **case**, remove the keyboard, some you have to take the motherboard out of the case to get the power supply out (Toshiba).

Laptop Processors

DIY-Computer-Repair can help!

Mobile Intel® Core™2 Extreme quad-core processor is the latest and greatest in laptop processors. You can get them from 2.60 GHz to 3 GHz, FSB from 800 MHz to 1333 MHz. **Too Cool!** *(Dual and quad-core processor means two or four processors in the processor case!)*

Remember `ESD` *will kill your processor so handle with car; see my* `safety` *tips before you start these procedures!*

Unfortunately because of the proprietary nature of a laptop you can not upgrade more than one or two revisions or speeds for your processor. For most laptops when the manufacture designs the laptop they have a plan for how many revisions of the laptop they will make then move on to the next design. Because they move things around you can not take a motherboard from say a IBM T30 and put it into a T23 case. Nope can't do that, I have a dead T23 and a T30 the case is trashed, the motherboards are to far apart in where the hard drive is, the connectors, you name it.

So about the only thing you can do is replace the current processor with the same one, you may get away with increasing the speed of the processor somewhat but you have to be **careful to not change the FSB speed**. That is if the processor you now have is a FSB (Front Side Bus) of 533 you can not upgrade to 800 because the motherboard support chips will under clock the processor and burn it up. (Been there done that, I lucked out, it didn't damage the motherboard!)

To get at the processor will be a time consuming task. You will have to open the case, remove some components, remove the heat sink and then put it all back together before you can test it, sorry that is the way it works. See my **case** and **keyboard** pages for disassembling your computer.

Before you begin check the new processor, does it have a new heat sink attached? (The only one I have see with the heat sink attached was a Dell Latitude) Did you get a new heat sink or do you reuse your old one. If you reuse your old one you need some **heat sink compound** (grease) and **Isopropyl Alcohol**. The Isopropyl Alcohol is for cleaning the old compound from the heat sink, you want to get all of the old compound off so the new compound will adhere when you apply it.

Ok, you have the case apart, look at the heat sink, some are retained by long screws, some have one or two levers you unlock and lift. Remove the heat sink and set it aside. Next look at the processor, there should be a lever on the side of the socket, unlock and lift the lever, **gently lift** out the old processor. (**Be careful** with the processor, if it has been in the computer a long time the **pins may be brittle** and if you break one off in the socket you will have to figure out how to get it out!)

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Now you can replace the processor, if you are reusing the heat sink **be sure to clean it** before applying the heat sink compound, then reverse the disassembly to reassemble your computer.

Power up and go to bios first!

If it does not power up go to **Trouble Shooting**, something has gone to ground or shorted out.

Enjoy your repaired computer!

Repairing laptop Video - LCD or Plasma screens

DIY-Computer-Repair can help!

Laptop LCD or Plasma Displays:

Repairing -

One of the things that laptop manufactures have excelled in is the video. When the plasma screen was introduced in the late 1980's laptops became real laptops, the weight dropped form around eight pounds to a little over three pounds. A real boon for laptop users.

Laptop repair requires extreme care and patience, this is a job you should not rush. If you feel that you do not have the expertise you may want to take the computer to a repair shop.

The case cover on the video screen should come apart the same as the computer case. To get to the components inside the video case you do not have to remove it from the main computer case. **The removing the bezel around the screen will give you access to the screen and the inverter module.** A word of caution if you have to remove the complete assembly: **be very careful with the ribbon connector and try to put the same amount of twists back in the cable when reinstalling the assembly back on the main case.** *[Note: not enough or too many twists will tear the ribbon cable when you open or close the video screen].*

Once you have the bezel off you can then change out the component that has failed. Reverse the disassembly to reassemble the repaired display.

One of the components that gets the most work or stress are the video screen's hinges. With the constant opening and closing the hinges will over time break. On newer computers more design emphasis has been given to the hinges and the failure rate has dropped off but they are still a point of failure. If you have a failure the best way to change the screen is to remove the keyboard to disconnect the ribbon cable and then remove the screws holding the video display.

IBM laptops the ribbon cable is accessible by removing the keyboard.

Laptop Video - LCD or Plasma screens Cleaning

DIY-Computer-Repair can help!

Laptop LCD or Plasma Displays:

Cleaning -

Laptop video display (either LCD or Plasma) surface is very soft, it **will** scratch very easily.

With that caution in mind you can clean your video display. A little knowledge and some caution will go a long way and your display will be easier to see.

Do:

Power the system off

Always use a soft cloth

Use glass cleaner

After cleaning wait ten minutes before powering up the system (the wait time will give any excess glass clean time to evaporate)

With the system powered off and cool, open the screen up, try to get it as horizontal as possible to keep any droplets of the glass cleaner from running down into the bezel, spray the glass cleaner on the cloth not the screen, wipe with gentle strokes.

Don't:

Use water (it will not remove grease build up)

Have the system powered up (you may get liquid inside the bezel, causing a short)

Use a paper towel (even a *soft* paper towel will scratch the screen)

Spray the cleaner on the screen (you may get liquid inside the bezel, causing a short)

Press on the screen with a lot of force (you may break the crystals inside the screen, this **will create black streaks on the screen**)

Remember glass cleaners have either Alcohol or Ammonia as the cleaning agent. Ammonia is corrosive and will damage copper or aluminum if not rinsed off.

I have been using glass cleaner on laptops since they first became available. I have read but have not tired 'baby wipes', because I do not know the composition of a baby wipe I would not recommend using them.

How to's... for Server owners

DIY-Computer-Repair can help!

Owning and Configuring Servers some How to's...

In the computing world there are two types of computers, **Workstations** and **Servers.**

What is the definition of a server? Well the official definitions such as 2003 Server is: A computer that serves files, applications, and data and more to multiple computers called clients.

What is the definition of a workstation (or client) such as XP: A workstation is a computer that modifies data, be it a spread sheet, a text file, a database, a movie, a graphic, surfing the web, or playing a game.

There are different types of servers, data base servers, file storage servers, print servers, Domain Controllers, and web servers to mention a few of the most common or well know.

Server hardware is normally more robust than a workstation, has more hard drives, processors, and sometimes more memory and is more expensive. Servers also come in two types, Towers and Rack mount. You would use a tower when you only need one or two servers in a fairly small space. You would use rack mount servers when you have more servers and want them to occupy the smallest space possible. You can put more than ten rack mount servers in the same space as two tower servers. The rack mount server chassis is manufactured different than the tower server case, no frills. I worked in a data center that had over two *thousand* servers in a 7000 sq. foot space, rows and rows of servers!

The main difference between a workstation and a server in the Windows world is how the Operating System is used. Both Windows XP and Windows 2003 Server use the same underlying engine to operate. ***The difference comes with how the OS*** (Operating System) ***is configured*** and the options that are installed. Even though both XP and 2003 Server come on a different CD or DVD the basics are the same.

When you load a server with 2003 Server you have more steps to complete than you would with say XP. The reason is that the server OS runs almost all programs as a service with out user intervention. Whereas XP runs most programs where the user can interact with them.

A few of the things that you would do when installing a server OS that you would not do to a workstation is:

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Install a 'Static IP' - This allows the server to be at the same IP at all times.

Install more than one NIC - This allows for what is known as Teaming, where two or more NIC (Network Interface Card) are set with the same MAC (Machine Address Code) and IP. Thus increasing the local LAN speed by the factor of the card's speed and cards. Such as two Identical NIC's running at 100 MBPS would yield 200 MBPS for the server to communicate with other servers/workstations on the LAN.

Install a RAID configuration - Redundant Array of Independent Disks - To do this you require a RAID Controller, once you have the controller configured you have to setup the partitions and volumes on the server. RAID controllers also come with an Accelerator, the accelerator caches the data for read/write operations making the data transfer faster.

Install any special services that the Server will preformed - DNS, DHCP, Domain Controller, Web Server, or any of the other functions the server requires to do it's job.

This article is not meant to be a short cut past the MCSE or the numerous guides for instilling and configuring a server. It is a series of 'How to's...' of problems and configurations I have came across in my career that I had to research to resolve.

I am leaving the links to my web site in the page there maybe updated information from time to time.

How to..

Hardware considerations for a server - Processor, memory, drives, services	Servers - Hardware considerations
Configuration considerations for your server - Designing your network and adding additional servers	Servers - Configuration considerations
Configuring the RAID for a sever	Servers - RAID Configurations
Configuring Teaming for NIC's	Servers - Teaming NICS
Configuring your IP	Servers - Configuring your IP
Configuring DNS	Servers - Configuring DNS
Configuring WINS	Servers - Configuring WINS
Configuring a Domain Controller	Servers - Configuring a Domain Controller

Configuring Active Directory Users and Computers	Servers - Configuring Active Directory
Configuring DHCP	Servers - Configuring DHCP

Configuring a Web Server

Software and Applications

Tools

This is a short guide not to be construed as a complete working of server and domain functions. If you need more help it is available with the help function. There are very comprehensive books available for a complete run down on how to use Active Directory.

Servers - Hardware considerations

DIY-Computer-Repair can help!

Hardware considerations for a server, how many processors, how much memory, hard drive space, services you will need to install to make your server functional in your environment.

Most servers support more than one processor, some go as high as 64 processors (these high end servers cost as much as a house!) Normally you would want a server with dual or quad processors. When you have dual or quad processors the server will be able to do more tasks faster. That is if the server is a file server it will be able to send and receive, read and write files faster. The name of the game for servers is speed, you don't want your employees waiting on the server to open a file, you want them to be working on the file.

Server memory is different from workstation memory, it has more controls on how the memory is written to and retention of the data in memory, EEC (Electronic Error Checking) is one of the most common types of memory for servers. Servers also have the facility for more memory than a workstation. Some servers can accommodate up to a terabyte (102,400,000,000 bytes) of memory, that is 1024 gigs of memory, your workstation will bulk at more than 8 gig of memory!

Server storage (hard drive space) is also different from workstation storage, although the storage is becoming more aligned because of the SATA specification. If you have a SATA drive in your workstation the same drive can be used in a server, it is the way the drives are configured that is the key. Legacy servers use a drive specification called SCSI (Small Computer Serial Interface) and Legacy workstations used IDE (Integrated Drive Electronics) the two type of interfaces are not compatible, you need a different controller for each interface. With SATA you have one specification.

Sever services, when you decide what role the server will play in your network design (you will have to have a network to use a server!) the role will dictate what services you install. A Domain Controller for example will have to have additional services either on the Domain Controller or an additional support server, such as DNS, WINS, and DHCP.

So how do you figure out what your specifications for the server will be? By the role the server will play in the overall scheme of the domain.

You wouldn't want to pay for 900 gig of storage in an RAID 5 configuration for a DNS, WIN's, DHCP server, but you would want to have a dual processor and four to eight gig's of memory.

A small guide for servers:

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File, Data Base, or application servers. These types of servers require large quantities of storage. These servers will require more storage and a backup solution to protect the data in case of a catastrophic failure. Depending on your requirements the storage would run from 100 gig to terabytes.

Domain Controllers, Web servers, and support serves such as a print server, DNS, DHCP, or WIN's servers are more processor and memory intensive processes and do not require huge amounts of storage, the do how ever require a backup solution. Requirements vary but a starting point would be a dual processor and two gig's of memory.

Normal OS requirements for primary storage is 16 gig, but with all upgrades, patches, and additional security that the OS will undergo over the span of service I would recommend you start with a minimum of 36 gig, if you can afford it 72 gig.

You will also want a secondary storage for the swap file, any data the server will be using or creating such as data base programs that the Domain Controller will create.

A special server would be a Firewall server, this server would have a firewall software solution and a proxy server software solution to keep your network safe from cyber attack, this server does not have to be a high powered server or have a large amount of storage. In addition to the router hardware firewall solution this will enhance your networks security.

One last special server is the Multimedia server. The reason this is a special server is that it requires large amounts of storage, memory, and processing power. In addition to the storage, memory, and processors it requires a higher video resolution than the normal server. Add to that some multimedia applications require special optical devices.

Servers - Configuration considerations

DIY-Computer-Repair can help!

Before you consider your server configuration you need to develop a plan for your network. Yes you have to have a network, how else are you going to access the server from your workstations? **One of the bonus you receive from a network server is the increase in security for you computers!**

A network consists of a network hub or switch, wiring, and network cards for each device. A device is considered to be a computer, a printer, or other peripheral that you need to share to other users.

There are different 'topologies' that a network can take. The normal topology would be the 'Star' topology, think of it as a central hub with all the devices connect to the hub only. All connections from one device to another device has to go through the hub.

Also consider the name of your **Domain** for your network, make it as simple as possible, you will be typing it a lot for a while!

The easiest way to setup your network addresses is to use a spreadsheet, four columns listing:

The computer name, the assigned IP, the subnet mask IP, and the gateway IP. You will have to calculate the subnet mask IP or you can use this url: calculate subnet mask

Once you have the network design you can proceed to the server configuration.

Servers require a domain, this is the best of two worlds, **Security and Service**. A domain will give you the **additional security** by requiring all connections to the network to be **authenticated by the Domain Controller**. **No user id and password, no access.**

In addition to the security feature you **gain** in services that a work group does not have. Services such as DNS (Domain Naming Service) or DHCP (Dynamic Host Configuration Protocol) that help configure your network naming and IP structure.

One server can perform all these tasks and do others also. You can use one server to be:

Domain Controller - The domain controller is the primary server that controls all the functions and security for the domain.

DNS controller - Domain Naming Service, this service is used to resolve names into IP addresses for devices, when a user issues a query for a named device this service returns the IP address.

DHCP controller - Dynamic Host Configuration Protocol is a service that controls the automatic issuing of IP addresses to client computers. With this service you can have all network properties automatically configured when a workstation connects to the network.

WINS controller - Windows Internet Naming Service a Windows version of DNS, faster than DNS when installed on a Windows Server, local network only.

Print server - This service is useful when you have shared printers, you can configure the server to download all the necessary drivers from one point instead automatically.

File server - A file server is just that, a server that stores files for your employees from documents to application installations.

Specialty servers - These servers range from Application servers to installation servers.

If you were to have one server this server would have to be very powerful and have a large storage capacity. It would also be very expensive.

Your best solution is to spread the tasks across two or more servers, this would be more economical. If you compared the cost of one server with all the requirements to two or three less powerful servers you would see a large cost savings by buying the less powerful servers.

In my experience the most powerful server would be the Domain Controller, then another server for **DNS**, **DHCP**, **WINS**, and print, and finally a File storage server.

You could split all the functions between two servers, Domain Controller, DNS, DHCP, and WINS on one server. File storage, print, and backup services on another server.

As you can see you have three options for setting up your network servers.

Servers - RAID Configurations

DIY-Computer-Repair can help!

Configuring the RAID Array (Redundant Array of Independent Drives) means taking more than three hard drives and making one large partition. Sounds simple doesn't it? As with most server services and hardware it sounds simple but really isn't until you understand the process.

This is a hardware solution! Not to be confused with Windows Disk Management!

There are three main types of RAID configurations: RAID 0, RAID 1, and RAID 5. We will not consider the other types in between.

RAID 0 is when you have a RAID controller in a system and don't use the RAID facility of the controller.

RAID 1 is one of the most often used to backup the OS drive.

RAID 5 is the other most often used configuration for enlarging and making a redundant partition.

RAID 1 also known as 'Mirroring' is when you have your OS on one drive and make an exact copy of another drive. When the mirror process is complete any thing that is written to the original drive will also be written to the mirror drive. This is a excellent way to backup the OS drive because you can write all security and configuration to the mirror drive with out any extra software or security considerations.

RAID 5 configuration allows for you to replace one failed hard drive with out losing any data. This is very important when dealing with very large volumes of data. Be aware that RAID 5 **DOES NOT** take the place of scheduled backups! The way it works is the controller will write data across all but one of the drives, then on the last drive it will write a parity bit with the location of the written data, you can select the size of each part of data that is written, 64 bytes is the normal size. A visualization: you have a RAID controller in your server, other than the OS drive you have four more drives, say 36 gig each. When you setup the RAID 5 the controller will combine three of the drives into one partition of 108 gig (approximately) and the fourth drive will become the parity drive. So you have lost 36 gig of drive space! Yes, but if you have one of the drives fail all you have to do is replace the drive and your data will be safe!

Ok, now you know why you should use a RAID controller and configure it in your server.

But Wait! There's More!

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What more can there be? I mean you need a RAID controller, you need to 'Mirror' the OS drive, and use RAID 5 on the data drives. Well there are a couple of things you should know, some pit falls of the different RAID configurations. Do's and Don'ts of using the RAID controller.

Considerations - SCSI or SATA?

SCSI (Small Computer Serial Interface) is the most common drive and controller interface at this time. First introduced in the mid 1980's it has been the main stay for servers because of the data transfer speed and reliability. The controllers have built in memory and cache, if power fails the data will be retained by the back up battery for the cache on the controller card. Although the controllers and drives are moderate to expensive (depending on the size of the drive of course).

SATA (Serial Advanced Technology Attachment) is the 'new kid on the block' and is coming into it's own. Originally only for workstations and only one or two drives per system now there are RAID controllers that can accommodate up to 16 drives and soon more. A SATA controller and drives would be comparatively cheaper than the traditional SCSI configuration.

Tid bits that you may want to know -

When you get your RAID controller you will receive a cd or floppy with the current drivers on it, **safe guard this data!** Make yourself a bootable device (floppy, usb, or cd) with the drivers on it incase of catastrophic failure.

When you have a hard drive failure replace it right away, if you have two failures the data on the RAID will be lost. T**he RAID controller can only recover from ONE drive failure not multiple drive failures.**

As the server ages you should also consider powering it down when there are long periods of inactivity. A server normally runs 24/7 never being shut down for any longer than it takes to replace a failed part. Because the materials of the computer expand with heat they do not get a long cool down period. This continuous expansion will over time take its toll on the soldier joints and pcb boards of the components. To over come this if the computer is powered off once a week for a period long enough to dissipate the heat build up and return to their pre heat expansion state you will have less failures especially hard drives, next to the processor a hard drive will create the most heat inside the computer.

The last tid bit for the RAID configuration you should be aware of is this: When you make a RAID 5 with SCSI controller and drives **you should use all the same size drives**. What the controller sees is the smallest drive you want to create the array with and resize all the other drives to that size. The reason for this is the parity, the parity bit is dependent on the overall size of the drive, if you have four drives, three 36 gig and one 16 gig then

the array would be 48 gig with one parity drive, you will lose 48 gig! **In other words use the same size and type of drive when you use RAID 5 solution.**

After making your array with the hardware controller you need to make the volume with Windows Disk Management, which has it's own idiosyncrasies.

Servers - Teaming for NIC's

Diy-Computer-Repair can help!

Configuring Teaming for NIC's (Network Interface Card). NIC's come in different forms, one port, dual port, quad port. You can take to similar NIC's and team them.

One card that is easy to take two of and team very easily is the 3Com 3c905 series.

Before we get to the teaming of the nic's there are a few things you should know about network cards and hub/swithces.

To get the fullest potential from your network you should set these parameters:

Flow Control -

Duplex - Full (this means that the network device (NIC or HUB/Switch) will transmit and receive at the same time).

Speed - 100 or 1000, **your network will only be as fast as the slowest card** regardless of the hub/switch brand.

IP Range -

IP - Always set your HUB/Switch IP range first! Normally people select the generic 192.168.1.0 subnet, this is cool, all the hackers like to know what your IP range is makes it easier for them. Pick an IP range anywhere but 192.168.1.0, Your network will be behind a router/firewall so the actual IP range is your choice, the harder you make it for the hackers/crackers/thieves the better it is for you!

Now for the teaming -

Depending on your network cards you will either get a utility or will have to use Windows Network Bridging. If you buy a dual or quad NIC you should get a utility with the NIC. The one that I always use is from HP/Compaq.

When you start the utility you have a choice of the NIC's in the computer, select the NIC's you want to team, then team them. You will want to team the NIC's by IP or MAC code, I use IP but that is a personal choice, it doesn't matter. Normally you will want to use Load Balancing, you could use Fault tolerant. For speed use Load Balancing. and Balance with IP Address. Unless you have a high end switch such as the Cisco 4800 or higher series don't use Switch-assisted Load balancing.

Once you have the team setup a new ICON will appear in the Network Properties box, this will be the IP of the server, set your network properties. Once you have the properties

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setup (some utilities require a restart) and the icon in the tray you should see the dual nic at 200 or 2000 (if you have a gigabit NIC) if you only see 100 MBPS for the icon check your settings. Insure both cards flow control is set to 100/Full.

Notes -

Teaming will only be available to your local network, it will not make any difference to a connection to your ISP.

Your HUB/Switch **MUST** support 100/Full flow control.

When you connect your Cat5/6 cables to the HUB Switch use ports side by side.

If you are using Fault tolerant and have two HUB/Switches you would put one cable in one HUB/Switch and one in the other HUB/Switch, this allows for fall over if a NIC, port, cable, or HUB/Switch fails.

Servers - Configuring your IP

DIY-Computer-Repair can help!

Why a Server IP needs to be static ...

When installing from the Server installation cd the set up program will find your NIC, then it will prompt you for the IP, Subnet Mask, and Gateway IP. If this is the first server in the Domain see Configuring a Domain page.

Using your spread sheet from the **Configuration considerations** section you need to have these IP addresses:
Network IP -
Subnet mask -
Gateway -
DNS -
WINS -
Domain name -

Once you have completed your server installation you need to complete the configuration of your NIC as follows:

If your computer is all ready set up and you need to change the IP you would do this through the My Network Places menu. Right click on the My Network Places icon, drop down to Properties, a window will open with the New Connection Wizard and any network cards (NIC) installed in the computer. Right click on the NIC you want to work with, drop down to properties.

Highlight the Internet Protocol (TCP/IP) selection, click on the Properties button.

On the **General Properties** page you will see the IP, Subnet Mask, Gateway, and DNS Server settings. These are required for static IP settings.

Once you have these set click on **Advanced**, for normal operation the **Gateway Metric** should be set for Automatic metric. If you are having problems connecting to the gateway router and have a switch between the server and router remove the Automatic metric check box and set it for 1, then edit the gateway IP and set the metric for 1 there also. This will tell the network software to increase the time out before returning the device not found error.

Next click on the DNS tab, there should be a DNS address here, if not add the DNS IP. In addition to the IP you should set the Network DNS **suffix**. Click the radio button Append these DNS suffixes and then click edit and add the Domain name. Add the Domain name to the box beside DNS suffix for this connection. Then click the check boxes for Register

this connection's addresses in DNS and Use this connection's DNS suffix in DNS registration. (This will automatically register the IP and computer name with your DNS server).

Next click on the WINS tab, add your WINS server IP. Then drop down to the radio button for **Enable NetBIOS** over TCP/IP and click it. (This allows you to use DNS names to search for computers/devices).

Close all pages back down to the Local Area Connection Properties, on the General tab at the bottom are two check boxes. If you want to have the network connection visible in the tray click the check box for Show icon in notification area when connected. (This is a good idea when troubleshooting a network problem or when you have more than one NIC's installed in a computer). Then I uncheck the box for Notify me when this connection.... (You will know when your network connection degrades, this is a pop up if you want to be notified).

Close all pages. If you have more than one NIC in the computer you may want to name the NIC's, naming the teamed NIC's will allow you to see when one of them has failed, also if you team your NIC's naming the team software will make it more visible.

Once you restart your server you are now ready to join your server to your domain.

Servers - Configuring DNS

DIY-Computer-Repair can help!

Configuring DNS...

Once you have decided on which server will be your DNS Server you need to install the service. You can either use Add Programs or Configure Your Server applet to install the service.

Installation is quite easy. Once you have the service installed and have restarted your computer you will need to configure it.

Open the service applet, the fist thing you need to do is add a server to the service, normally you would add the server you are working with.

Next you will need to create a 'Zone' for your DNS records to reside in. Right click on the server, select 'Configure a DNS Server' a wizard will open, click next, select 'Create a forward lookup zone (recommended for small networks...). Click next, leave radio button at 'This server maintains the zone', click next.

Enter the zone name, this will be the Domain Name! If you use some arbitrary name you will have problems resolving your Domain name suffix! Click next.

On the Dynamic Update page you do not need to change the default UNLESS you have legacy computers on your network! Click next.

On the Forwarders page select 'No, it should not forward queries. Unless you plan on having redundant DNS servers you do not need to forward queries.

The wizard will look for the 'Root Hints' that was installed when you installed the service. Then you get the finish page.

Now all we need to do is configure the records.

If you have selected Dynamic updates the only records you will need to create are non standard records. That is services that require a DNS record such as the WINS service, a Web site, or an E-Mail server.

To create a record click on the 'Forward Lookup Zones, then right click on the domain name, in the menu select the required function.

To add a computer that is a legacy OS (such as NT, Win98, or other device like a printer) select 'New Host', put in the name of the device and the IP. (Hint, you can try to resolve

the IP by clicking on the 'Resolve' button, the service will try to find the IP of the device, this may not work if the DNS service is new).

To add a web site use the 'Alias (CNAME)' selection.

In the right window of the DNS properties under 'Type' you will see a 'Name Server (NS)'. Open the properties and go to the WINS tab. Click on the box 'Use WINS forward lookup' then add the address of your WINS service server. You need to do this before installing the WINS Service.

There are more functions the DNS service can provide but are beyond the scope of this document.

I will how ever point out that you will need to back up your DNS service on a constant basis, I would suggest you back it to another server or tape.

Servers - Configuring WINS

DIY-Computer-Repair can help!

Configuring WINS...

After configuring your DNS service, you can either use Add Programs or Configure Your Server applet to install the WINS service.

The WINS service works in conjunction with DNS, the only configuration needed is to select the server and to 'Authorize' the server through Active Directory, catch 22 you have to have WINS to set up Active Directory, you have to have Active Directory to authorize WINS. Neat. You can leave the authorization until the Active Directory installation is complete.

WINS has a feature that can replicate itself to another WINS server. If you have another server the process is quite simple. The built in help will walk you through the process.

Servers - Configuring a Domain Controller

DIY-Computer-Repair can help!

Configuring a Domain Controller a How to...

Before starting you **must have a server with these services configured**: **DNS, WINS,** and optional **DHCP**. If you selected Dynamic DNS when you set up your DNS Service there will be extra steps involved with the configuration.

Why have a domain controller? The considerations for a domain controller are numerous. The main reason for having a domain is **security**. The domain controller (DC) ensures that anyone accessing a computer system on your network has two items: a **user id** and a **password**. A domain controller has other functions as well. Create and audit user id's. A user id allows the security control over what resources the user accesses. The user id can also be used with e-mail and applications thus having a **single log on** for all Domain related activities.

Note: *You need to insure you have the Computer Administrators password to continue with this process! If you did not rename the administrator account do it now, this will become the domain administrator account when you are complete.*

I will assume that this is your first Domain Controller in your domain. You have the IP addresses, and Domain Name ready. So now you need to create the Domain Controller.

You can use the Add/Remove programs applet or the Configure your server page. I recommend the Configure your server page, the Wizard has a few more steps that will save you time with pre-configuring the Domain Controller (DC).

When you open the Configure your Server Wizard, go to the Server Role page. There you will see a list of Roles the server is configured for. Select '**Domain Controller (Active Directory)**'. Follow the prompts to create the DC on your server.

The process is quite simple and straight forward because you have all ready met the prerequisite installations.

As you go through the steps you need to select: **domain controller for a new domain tree.** This being the first DC server.

Finish the installation and restart the computer. Log on with the **Domain Administrator's user id and password**.

Once you have installed the Domain then you will have access to more tools such as Active Directory Users and Computers, Active Directory Sites and Services, Active Directory Domains and Trusts, Distributed File System, and many more.

The main thing is that you have increased the security of your network a thousand fold.

Servers - Configuring Active Directory

DIY-Computer-Repair can help!

Configuring Active Directory a How to...

Open the Active Directory Users and Computers console located in the Administrative Tools from the Programs listing.

If you look at the **hierarchy** you can use the set up as is or you can customize it with your own hierarchy. Create your base container and add the other containers underneath. Once you have decided on your hierarchy then the only thing left to do is to do it! *You can name the parent container anything you like, you will be doing a lot of work in it.*

If you have a small domain (less than 10 users) you can put your user id's in the user container (all the folders in the AD interface are called containers, **they look like folders but** *are not*). If you anticipate that you will have more users then create a new container for the domain. You can create containers for each of your departments, cities, or states under the parent container. Name and create your containers that fits your business logic, if you are only in one city then you might want the containers to be departmental. If you have locations in different cities but very few states then create your containers by the city then under that the departments, and so on.

Consider how your users will access the resources of the domain. Using Groups you can control each user id's access to the resource. You can create the container under your new domain container along with the computers, user(s), groups, and printers.

After setting up your container hierarchy you can work on the domain user id's. Unless you know how to set up a user id (it is a little different from a user ID on a standalone system) use the help function built into the AD Console.

Note: **You will want to insure that there are other user id's that have Administrator association, don't go overboard just users that you can trust with the security of your domain.**

Next Groups, this is the meat of the **security**. You control who gets access to what resource through the Group function. You can set up each group by function, department, city, state, or what you think is appropriate. *You use groups to set security on your resources.* You wouldn't want a worker on the assembly line to have access to the a sensitive server or folder, but would want the a supervisor to have access to create reports.

Next you should think about creating containers for computers, printers, and servers (if you have more than two servers). This will simplify your administrative tasks. You can

assign security to each Group then that security can be assigned to the objects in the container.

Note: When you join a computer to the domain it will reside in the **Domain computers container**. If you have a custom hierarchy with workstations and/or servers you will have to move the new computer name to one of these containers. **A way around this is to create the computer name in the appropriate container before joining it to the domain.**

Sample: you have a department with fifteen users, of those three are supervisors. So you would create the container by department name, under that create two more containers. One for the supervisors and one for the workers. You put the three supervisors in the supervisor container and the workers in the worker container. Then you can assign rights to the supervisor Group to a folder on the server called reports. The workers will not have access to the folder called reports.

Sample: You have three servers and thirty workstations. You create a container called Servers and one called Workstations. You move the servers into the server container and the workstations into the workstation container. You have two Domain Administrators but only one that will work on Servers and both will work on workstations. **You give the one administrator access to the server Group and workstation Group.** The workstation Group you give access to both. Thus the administrator that has workstation access can not log on to the servers.

Sample: You have five printers. Four are for everyone's use but the super-duper color printer is very expensive to operate. How do you insure that only certain users can access the color printer? You create one container for the printers. You give access to the color Group only to the users that require color printing. You give access to the other printer Group to all users.

This is a short guide not to be construed as a complete working of Active Directory. If you need more help it is available with the help function. There are very comprehensive books available for a complete run down on how to use Active Directory.

As you can see a domain will allow you to control who uses what, who access a high value resource or confidential files.

Servers - Configuring DHCP

DIY-Computer-Repair can help!

Configuring DHCP Service A How to...

Having DHCP service on your network will save you a lot of time, how much? Consider this - how long does it take to configure your network properties when you set up a new computer? Five minutes? Ten? Thirty? And who is going to keep track of the IP addresses that have already been used on other devices? The network Administrator! Lots of work. As a systems admin I cringe at the thought of how much time I spent on spread sheets with IP addresses listed by the Thousands! So here is a tool that will save so much time you may want to give it *a pay raise!*

DHCP can do more than dole out IP addresses to computers. You can configure the service to fill in all the blanks that took you all that time when you set up the NIC! **Along with the IP** the DHCP service can configure these for your NIC: **Subnet mask, Gateway, DNS, WINS**, **and more!**

So lets see how you would work this magic. As with any service you need to install it and configure it. You can use Add/Remove Programs, or Configure your server. I would suggest **Configure your server,** as with the other services the Wizard will do more pre-configuration.

Once you have the service installed you need to configure it, now this will get involved so I will set up a table with the name of the item to be configured and a sample of what should be in the field.

First we need to set up the console. Open the console, **add** your server then right click on the server, then right click on the DHCP label then click on **Authorize**.

Next you have to create the '**Scope**' the Scope is the meat of the DHCP service. Use the table to fill out the Scope.

Now the fields that you should fill in to make set up of a new computer or adding a computer to the network a snap!

Name Field	Field 1	Field 2
Server	Status	
yourdc.yourdomain.com [10.10.10.2]	Running	

Address pool		
Start IP Address	End IP Address	Description
10.10.10.100	10.10.10.255	Address range

		for distribution

Scope Options

Option Name	Vendor	Value
003 Router	Standard	10.10.10.10
004 Time Server	Standard	10.10.10.10
005 Name Servers	Standard	10.10.10.2
006 DNS Servers	Standard	10.10.10.2
015 DNS Domain Name	Standard	yourdomain.com
042 NTP Servers	Standard	10.10.10.10
044 WINS/NBNS Servers	Standard	10.10.10.2
046 WINS/NBT Node Type	Standard	0x8
012 Host Name	Standard	your dc server
032 Router Solicitation Address	Standard	10.10.10.10
044 WINS/NBNS Servers	Standard	10.10.10.2

Server Options

Option Name	Vendor	Value
003 Router	Standard	10.10.10.10
004 Time Server	Standard	10.10.10.10
005 Name Servers	Standard	10.10.10.2
006 DNS Servers	Standard	10.10.10.2
012 Host Name	Standard	yourdomain.com
015 DNS Domain Name	Standard	your dc server
032 Router Solicitation Address	Standard	10.10.10.10
042 NTP Servers	Standard	10.10.10.10
044 WINS/NBNS Servers	Standard	10.10.10.2

As you look at the table one thing that should be apparent what makes this so powerful. **No?** Well it is the **Address Pool**! All the other stuff is just fluff, helps the computer see other devices on the network!

With the address pool starting at 10.10.10.100 and ends at 10.10.10.254 will give you 154 IP addresses. If you need more then add them! See the help function on how to create a Super Scope.

Note 1: Do not end your Address Pool with xxx.xxx.xxx.255 [255 is reserved].

Note 2: I set this sample up with **100 static** IP addresses, this may seem like excessive but you will need static IP addresses for servers, printers, and Dial up among other things.

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To do a data backup is not the question, the question *is how and what to backup!*

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For normal day to day operations you should ***backup*** any files that were changed for that business day.

You should backup all your data either on a **daily, weekly, or monthly basis**, depending on how much data you generate or how much you change your data.

A person or business that only changes a word doc or spread sheet once a week wouldn't back it up daily.

A person or business that has *constantly changing documents* should **backup daily**. **A backup is only as good as the last time it was accomplished,** in other words if you don't backup on a regular or scheduled basis then any data you generated between the backup and the recovery will be lost. Backup regularly on a schedule!!

Where to backup your data to? Well this depends on how much data you have. Say you have a small business. Your business uses email and spread sheets and occasionally a word document. Your total daily generated data may be ten meg of data. This of course is to large for a floppy.

There are **different types** of *backups:*

- **Incremental**
- **Differential**
- **Full**
- **Image**

There are **different types** of *devices*:

- **Tape Drive**
- **CD Rom** (rewriteable disks)
- **Flash drive**
- **External hard drive.**
  The actual **backup**:
  Manual backup
  Automated backup

Do you know how to use the backup program built into Windows XP?

Different data backup types

DIY-Computer-Repair can help!

There are different types of data backups.

- **Incremental**
- **Differential**
- **Full**
- **Image**

Incremental is only files that have change in a given period, based on date/time stamp of the file.
Differential is only files that have changed based on file size and CRC (checksum redundancy check)
Full is complete backup of all data in a given folder, volume, or drive.
Image is a complete re-installable copy of a hard drive or partition.

So you need to think about what you have that is of the **highest value**, then of value, then how much time it will take you to recover from a disaster.

Irreplaceable documents should be printed and stored where the elements will have the least effect, safe deposit box, etc.

Hard to replace or time consuming documents should be stored on a non-volatile media, **CD or DVD** is the best.

Now we get down to the **everyday document**, I will use a web page as an example. You create a web page on your computer, then when it is complete and looks the way you want it you upload it to your web site. Then you forget about the original on your hard drive until you need to update or change the page on the site. You go to look for the page but some how it has been overwritten, misplaced, or deleted. Now this is annoying but is not catastrophic. A **daily backup** would have put that document on some other media than your computer that you use every day. You could go to your backup and pull the original or latest page on to your computer do your changes and upload it.

What about your operating system drive and all the apps you have installed over time, you don't want to reinstall all of those again if your hard drive fails. There is a way to do this also.

Image or Clone copy of your Operating System drive.
You would want to keep at least two copies of the installation of your OS.
At this time you can not make a copy of the original install because you have installed a

lot of programs, deleted files, and so on. It is best to make a copy directly after the setup and before installing any applications. Once the system is up and running in a stable condition then I make my copy. The reason for doing this (bear with me on this one) is if I install an application and it crashes then I don't have to start all over with the OS install. Just put the copy back on the system, then I can figure out what cause the system to fail when I was installing the application, or call the publisher's support and have them figure it out.

A good use for the second copy is after you get all your applications installed lets say you inadvertently received a virus, it is causing all kinds of problems with your system. Just put the second copy on your system, restore any data that has changed from the time of the copy to now. You still need to keep those cd's, serial number's, and programs you downloaded safe.

One advantage of doing a copy after install is that you don't have to reinstall all of your applications. I have one application that every time it is installed I have to go to the publisher and get a new license, this is cool, keeps someone from pirating it, but it is a pain because it takes three working days to get the new activation code. With an image when I blow up my system (happens to the best believe me) all I do is put the copy back on, restore some data and I am up and running, takes about thirty or forty minutes.

There are numerous programs to do the image of your hard drives, I recommend either Norton's Ghost or Acronis True Image . There are free programs out there, but as the old axiom goes: **You Get What You Pay For**. Be aware that you will need a **bootable floppy or CD**. Be sure to read all the instructions before you start, printing the main points is a good idea.

The different data backup devices

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You could use one of the following devices to do a data backup on a daily, weekly, and monthly basis.

- **Tape Drive**

- **CD Rom** (rewriteable disks)
- **Flash drive**
- **External hard drive.**

Each of these devices has pros and cons for backup. I will list them here:

Tape:
Pros: Large capacity, can be encrypted, fairly long life.
Cons: Expensive, both the drive and the media. Complicated.
CD ROM or DVD:
Pros: Medium to large capacity, extremely long life, easy to store, can be encrypted.
Cons: Complicated procedure, read only once the data is written.
Flash drive:
Pros: Cheap, small, easy to use. Can be encrypted.
Cons: Low capacity, easy to lose or to steal, easy to erase!
External hard drive:
Pros: Large capacity, easy to use, can be fairly small, medium price. Can be encrypted.
Cons: Easy to steal.

Scheduling:

You should review how much data you generate daily, weekly, and monthly. If you can backup your data at the end of each business day the better it will be when you need to recover your data after a **catastrophic** event. There are different ways to backup your data.

Manual:

You go to each folder/directory and copy all the contents to your backup media.

Automated:

You use a program to search your computer(s) for any document that has changed during the given period. You can set the program to do daily, weekly, monthly, or full backups of selected folders/directories and select the file type to backup. You don't need to backup programs or their associated files. This type of backup will be discussed in the next section.

The data backup process.

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The actual data backup:

Manual backup

To do a manual backup of your data is easy, you go to the folder where you have your documents, select the ones you want to backup, open the folder on the backup device and copy the files there. Simple.

Problem:
Unless you create a new folder each time you do the backup you have no way to keep track of changes with out going to the properties of the document and looking at the change date.

If you have a few documents that you change infrequently then you could create a new folder for your backup and then copy the backup into that folder, time consuming but you will have a history of your documents back to when you started your backup procedure.

Automated backup

Using software to automate your backup procedure along with a set schedule of when the backup occurs is the simplest way to insure you have a current backup of your data incase of a disaster.

You can use the built in software that comes with your OS or you can purchase a third party program.

To use the built in software in Windows 2000 or XP you have to *enable* it, it is disabled by default (to find it use the help function and type in "backup"). Once you have it enabled you can set it to run on a daily basis for any document/folder or drive with the built in scheduler. For those that would rather use third party software for backup the one I am most familiar with is Backup Exec, for a single license it is over 400 dollars, as I was asked by a executive when I approached her for the approval to purchase the software she said: "How much is the data worth?" So you will have to ask yourself the question: *"How much is my data worth? How long will it take me to recreate a document or series of documents? How much money will I lose while I am recreating the documents? Can the documents be recreated or will they be lost forever?"*

Note:
Be aware that backing up the "*System state*" is not a complete backup of your OS drive. I have found in the past that the chances of recovering a failed OS with the backup of the

system state to be **less than reliable**, most of the recoveries were so corrupt I had to reinstall the OS, and every application also.

One last note:

Another storage medium that I have not mentioned is a server, I did not add it as a normal backup device because not all medium or small businesses have one available. The server gives you a better choice for storage and backup with increased redundancy of the hardware and security of the operating system.

# Backup for Windows XP

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Do you know how to use the backup program built into Windows XP?

Would you like to know how it works and how it can save your data in case of a catastrophic failure?

The program is located in the System Tools section of Accessories, simply called Backup. If you do not see Backup in the System Tools, you can access the program by typing ntbackup.exe at the start/run command line. This will start with a splash screen select Advanced Mode and the program will start as you see it below. You will need a place to store your data. I suggest an external device, if you don't have a large amount of data a pen/flash drive will do, but if you have say a gig or more then the pen/flash drive will only hold one backup session, you may want a larger device.

Check my Data Backup pages for the different types of devices and types of backup you can do.

Upon opening the Backup program, you will be greeted by the Backup page, you can use the wizard on the first backup. The following procedure will walk you through a successful backup. You can use your local hard drive the first time through, then when you have an external device copy the backup over and use that for your scheduled backups.
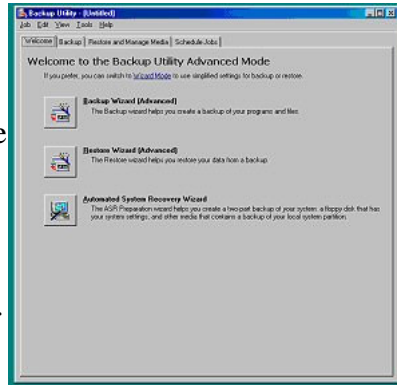
Once you click on the Backup button you will be given an Explorer view of your computer, check the boxes of the directories you want to backup, if you want to drill deeper into the directory to select individual files then click on the plus buttons until you reach the desired level. put a check mark in each box you want to back up. Next you have to name the file of the backup and the location of the backup, I suggest you create a folder just for your backups on an external device.
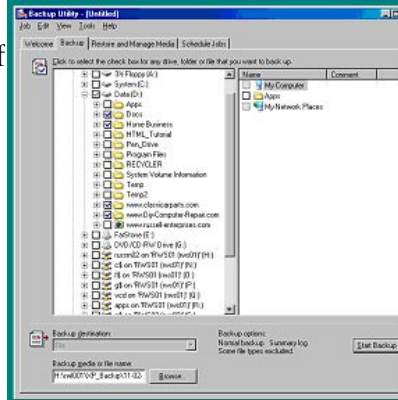
Once you have your selections, click on the 'Start Backup', the process will ask you for a backup description and if you want to append (add to) an existing backup or replace a back up. If you use a different name each time this will be irrelevant.
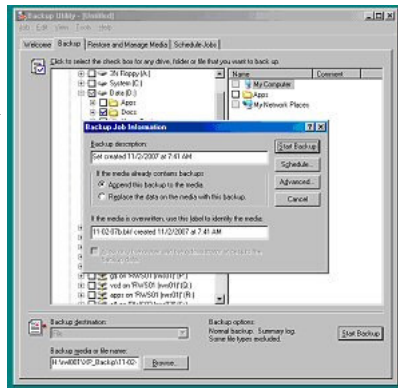
Next click the 'Advanced' button, here you will select options for 'Verify data after backup' (recommended!), 'Disable volume shadow copy' (recommended), and 'Backup Type'. If you are going to setup a scheduled back up then you would select daily, if you just want to backup items that have changed select 'Incremental' - Note: you have to use append when you use 'Incremental or Differential' backup types. If this is a one time backup leave the selection at 'Normal'.

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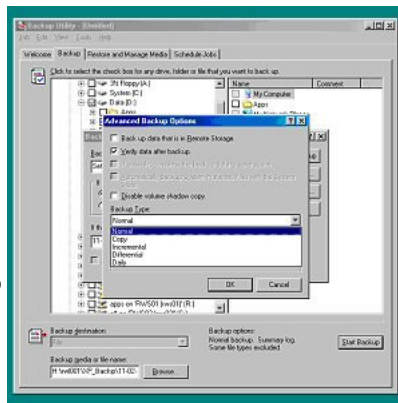
If you want to start your scheduled backup now select the 'Schedule' button the process will ask you if you want to save the backup selections at this time, select 'Yes'
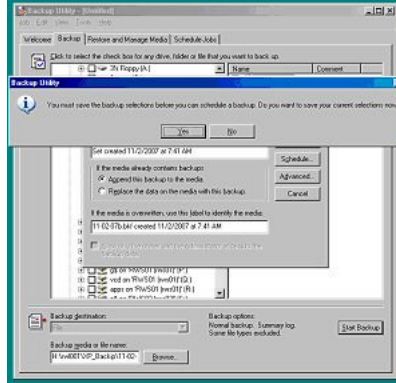
Name your backup, select the folder where the backup profile will be saved, you can leave the folder as default.
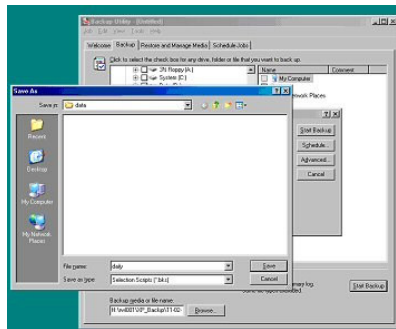
Your next steps are to setup the schedule for your backups, I suggest you set your schedule for the end of the work day, that way your back up will be complete for the day it is run. Name your backup, if you run different types of backups use creative names, daily for everyday backups (Incremental), month end if you run a complete backup at the end of the month, year end if you run a complete backup at the end of the year.
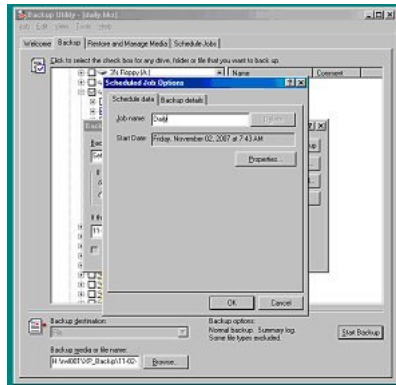
Once you have the date set, set the time or you will get this error:
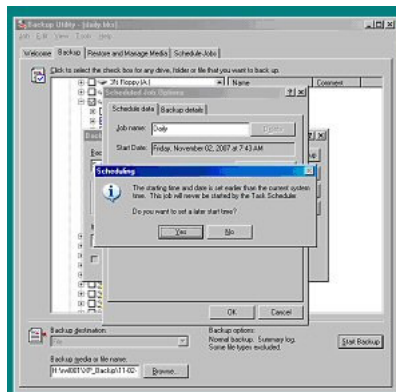
Next step is setting the actual
schedule, if this is a one time backup
leave at once, if you want it to run on
a daily, weekly, other schedule select
the appropriate type. Set your start
time also, you should do your backup
when your computer is not being
utilized and you have open files, if a
file is open the process will skip that
file. This means that if you start the
backup and you have selected the
location where your email is located
and it is open then it will not backup
your email files.
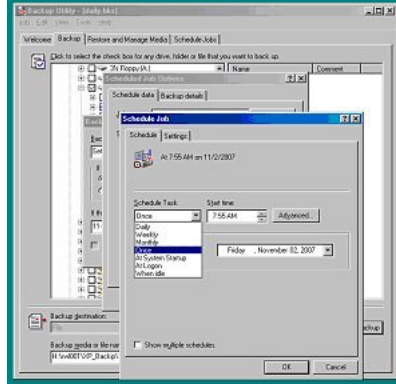
Click ok, the process will run at the
scheduled time.
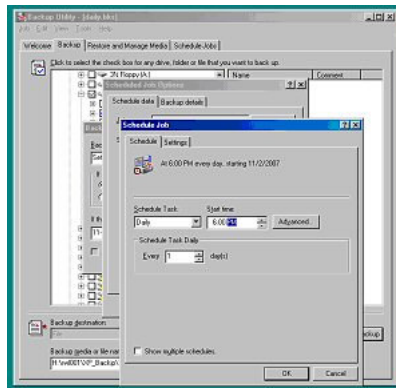
This is a sample of the backup process in progress.
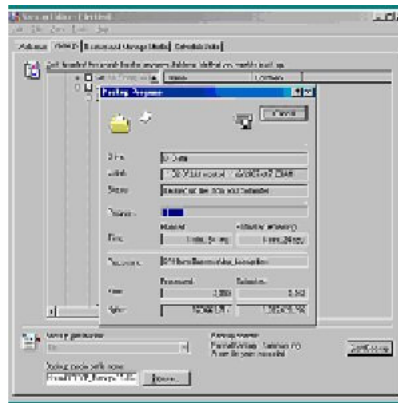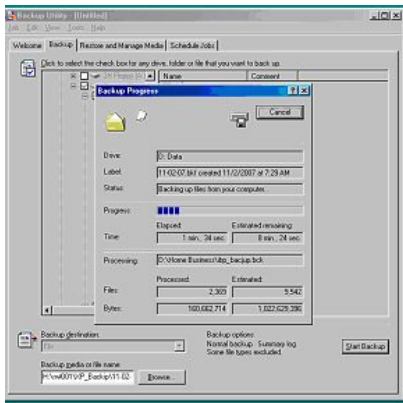
*Always remember: Your recovery is only as good as your last
backup! Backup frequently and on schedule!*

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Computer Hardware Reviews

DIY-Computer-Repair can help!

Hardware Reviews for your buying decisions.

Software reviews also!!

Ever look and look and look for information for something? You know that some where on the world wide web someone has an answer. I am going to attempt to help you get some answers to those nagging questions.

Is this a good product?

How good is the manufacturer support?

Does the manufacture have follow on drivers for new devices?

How about bios upgrades, not many people know that there are upgrades for their video cards, network cards and yes, your hard drive that the manufacture provides for free. Not all devices need to be upgraded, not all devices can be upgraded. But sometimes after a device goes into service the manufacture finds or is notified about a defect, it is cheaper and faster to do a "BIOS" upgrade.

As I build out my web site I will be reviewing different products. Check back here often or when you are considering a purchase for a review. I will try to do the latest and greatest, but there are still some pretty good devices that are being produced that meet or exceed the latest and greatest (*and sometimes they are a lot cheaper!*)

I am leaving the links to my web site in here as the information may be updated from time to time. These links will open in a new window:

ABIT Motherboard Review

ASUS Motherboard Review

DFI Motherboard Review

ECS Motherboard Review

Tyan Socket 478 P4 Motherboard Review

IDE or SATA hard drives? Review

[ATI AGP Video Card Review](#)

[Mac vs Intel](#)

[AMD vs Intel](#)

ABIT Motherboard Review

DIY-Computer-Repair can help!

ABIT motherboard Abit SG-80DC LGA775

For me, an ABIT Motherboard delivers exceptional value with their products. I have used ABIT motherboards for one of my servers for a number of years. The cost for a "Name brand" server is prohibitive for the new or small business owner for the everyday use that the power of a dual processor motherboard delivers. I currently have an ABIT dual processor as my main server, it is running two PIII 1Ghz processors. These are not XEON processors just the regular desktop processors. The ABIT dual processor motherboard has other features built in that you would have to pay extra for on other dual processor motherboards. One of the features that I feel is exceptional is the built in RAID array controller. It has the High Point RAID array controller built into the motherboard, this controller as a stand alone card would cost more that the motherboard. It also was one of the first motherboards to incorporate the USB 2.0 standard, even my two year old lap top doesn't have that!

This ABIT motherboard is not a dual processor board but with Hyper-Threading capability it would be considered as fast as a dual processor mother board, with the SATA drive raid, 2gig memory capacity, and built in graphics I would consider this board for a replacement for my main server. As a small business owner I think that this motherboard would server me just as well as a Xeon processor motherboard at half the price.

Abit SG-80DC LGA775 ABIT Mother Board

CPU: Socket 775 Support Intel Pentium D/ Pentium 4/ Celeron D processor; Compatible with Intel P4-05A processors; Supports Intel Hyper-Threading/ XD-bit/ EM64T Technology; FSB 800/533 MHz Chipset: SIS 661FX & 964

Memory: 2x 184pin DDR-400 DIMMs, non-ECC un-buffered, Max Capacity 2GB

Slots: 1x AGP 8X Slot; 3x PCI Slots

IDE/SATA: 2x ATA-133 channels; 2x SATA ports supports RAID 0, 1

Audio: Integrated 5.1 Channel HD Audio CODEC

Video: Integrated SIS Mirage Graphics GPU high performance 256-bit 3D engine and 2D Graphics Controller

LAN: Integrated 10/100 PHY Ethernet Controller

Ports:
8x USB 2.0 ports (4 rear, 4 by headers)
2x PS/2 ports

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1x Serial port
1x Parallel port; 1 x Floppy port (Supports upto 2.88MB)
1x VGA port
1x RJ45 LAN port
Audio I/O jacks

Form Factor: Micro ATX, 24.4 x 24.4 cm

RoHS Compliant

Support offerings:

Online support for manuals, bois upgrades, and device drivers. One year warranty for most ABIT products. All returns must go though the reseller where item was purchased.

Because ABIT does not do an exchange or repair of your mother board I would give their support a 7 out of 10.

ASUS Motherboard Review

DIY-Computer-Repair can help!

ASUS Motherboard - Asus P5LD2 R2.0

Over the years I have owned numerous ASUS motherboards. Of those I have owned I have never had a hardware failure. This is a testament to the engineering and materials that ASUS incorporates into their products. The only reason I have had so many different mother boards is that each mother board is specific to a certain processor. That is to say the original 486 ASUS motherboard would not accommodate a Pentium processor, nor would the Pentium ASUS motherboard accommodate a PIII processor, and so on. I currently have a ASUS P4B motherboard,. I have upgraded processor four times on this motherboard. My P4B motherboard is at the end of it's upgrade path, I have the fastest P4 478 socket processor installed, need a new motherboard. What I find with the ASUS motherboards is that they have foresight when they engineer their products. I am currently considering an upgrade, this is a review of one of my choices.

This is one of the best boards I have found, the board presents two problems for me, I have a very fine AGP video card. If I upgrade to this motherboard I will have to purchase yet another Video card. The memory provisions are for DDR and there are only two slots, therefore I have to buy the memory now that I want to install instead of using my available memory then later on adding more memory. So I will have to add another $200+ for the two gig of memory I want the system to have. The board does support PCI-Express 16, so I can buy a video card with 512 meg of ram for around $150, more expense but with a high quality card and lots of ram I will not have to upgrade the video for a long time. The board has features that most other boards of the same class doesn't, such as the FSB starts at 533 and goes to 1066, this means that any new processor that Intel produces in the LGA775 package will work with the board. The Hype-Threading and core speeds past 3.8Ghz is a plus and you will save if you decide to upgrade the processor in the future. So if I run down the cost of my upgrade for this motherboard I will have to buy:
Processor: $129
Memory: $252
Video: $143
Mother board: $114

Total; $638

Not bad, for less than $700 I will have a system with a processor, memory, and video that will not require upgrades for at least three years and will run all the latest and greatest Operating System, games, and applications with out any problems. If in say a year from now I want to go to a processor that runs above 3 gig the motherboard will accept it, this path is cheaper than buying a new system by $300 and it is upgradeable.

Asus P5LD2 R2.0 ASUS Motherboard

CPU:
Socket 775 support Intel Pentium D/ Pentium 4/ Celeron processor;
Intel EM64T/ EIST/ Hyper-Threading Technology;
Support Intel next generation 04B/04A & 05B/05A CPU;
FSB 1066/800/533 MHz

Chipset:
Intel 945P & ICH7R

Memory:
2x 240pin DDR2-667/533/400 DIMMs, Dual Channel, non-ECC/un-buffered, Max capacity 4GB
Slots:
1x PCI Express x16 slot;
3x PCI Express x1 slots;
3x PCI slots

IDE/SATA:
2x ATA-133 channel (ITE 8211F);
1x ATA-100 channel, 4x SATA2 ports support RAID 0, 1, 5, 10 (Intel ICH7R)

Audio:
Realtek ALC882 8-channel High-Definition Audio CODEC

LAN:
Marvell 88E8053 PCI Express Gigabit Ethernet Controller

Ports:
8x USB 2.0 ports (4 rear, 4 by headers);
2x PS/2 ports;
1x Serial port;
1x Parallel port;
1x S/PDIF Out (Coaxial+Optical);

1x RJ45 LAN port;

Audio I/O jack

Form Factor: ATX, 12 x 9 inch / 30.5 x 23 cm

RoHS Compliant

Support offerings:

Online support for manuals, bois upgrades, and device drivers. One year warranty for most ASUS products. All returns must go though the reseller where item was purchased.

Because ASUS does not do an exchange or repair of your mother board I would give their support a 8 out of 10.

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DFI Motherboard Review

DIY-Computer-Repair can help!

DFI motherboard INFINITY 975X/G

I have only owned one DFI motherboard, it was for a Intel 286 processor. That was quite some time ago. This motherboard lasted over two years, the reason for replacing it was not a hardware failure but upgrade to a faster processor.

I think this motherboard has a lot of potential for the person who likes the latest and greatest. It has built in upgrade features like the FSB up to 1066, the IEEE1394 ports for future devices. The dual channel DDR2 memory with the speed of up to 800 MHz is a plus. With a embedded LAN capability of 1 Gig and eight usb ports you lack nothing on this board. This board will take a system to the extreme, the only draw back I can see with this board is it only has one processor slot, but with duo core capability that may be passé'.

INFINITY 975X/G

CPU: Socket 775 support Intel Core 2 Duo (Conroe family)/ Pentium D/ Pentium 4/ Celeron D processor; Support Intel Enhanced Memory 64 Technology (EMT64T); Support Enhanced Intel SpeedStep Technology (EIST); Support Intel Hyper-Threading Technology; FSB 1066/800/533 MHz

Chipset: Intel 975X & ICH7R

Memory: 4x 240pin DIMMs support Dual Channel DDR2-800/667/533 Memory; Max capacity 8GB

Slots: 2x PCI Express x16 slots (Support ATI CrossFire Technology) 1x PCI Express x4 slot 1x PCI Express x1 slot 2x PCI slots

IDE/SATA: 1x ATA-100 channel 4x SATA2 ports support RAID 0, 1, 0+1, 5 (Intel ICH7R) 1x External SATA2 port (JMB360)

Audio: Realtek ALC882 8 channel High Definition Audio CODEC

LAN: Realtek RTL8111B PCI Express Gigabit LAN

Ports: 8x USB 2.0 ports (4 rear, 4 by headers) 2x IEEE1394 ports (1 rear, 1 by header) 2x PS/2 ports 1x Parallel port 1x Optical S/PDIF-out port 1x RCA S/PDIF-out port 1x eSATA port 1x RJ45 LAN port Audio I/O jack

Form Factor: ATX, 12 x 9.6 inch / 30.5 x 24.4 cm

Support offerings:

Online support for manuals, bois upgrades, and device drivers. One year warranty for most DFI products. All returns must go though the reseller where item was purchased.

Because DFI does not do an exchange or repair of your motherboard I would give their support a 7 out of 10.

ECS Motherboard Review

DIY-Computer-Repair can help!

ECS Motherboard ECS 945G-M3 V3.0 Core 2 Duo MATX Motherboard

ECS (Elitegroup Computer Systems) has been manufacturing motherboards and peripherals for some time. Although based in Taiwan, their products are manufactured in China. ECS originally was one of the Premier Gaming PC manufactures but fell on hard times when the gaming boxes went big (XBOX, PS2, etc). I have not owned an ECS product so this is a barebones review. Their motherboards are state of the art, with all the latest innovations you would find on any top of the line motherboards.

The ECS motherboards support all the latest processors and have an upgrade path for future processors. One thing that does bother me about most of ECS motherboards are the ram slots, most of them only have two slots for ram, this means that you have to put in more than you currently want or pay for an upgrade at a later time and waste the money that you put in the ram at the start of your project, I would suggest you put a minimum of one gig DDR 2 memory module and leave the other slot open for upgrade at a future time. This board uses PCI-X for the integrated Gigabit LAN and video cards, which is great because it only has two PCI-X slots.

Mfr Part Number: 945G-M3 V3.0

CPU: Socket 775 support Intel Core 2 Duo/ Pentium D/ Pentium 4/ Celeron D processor; Support Hyper-Threading Technology; FSB 1066/800/533 MHz

Chipset: Intel 945G & ICH7

Memory: 2x 240pin DDR2-667/533/400 DIMMs, Dual Channel, Max capacity 2GB

Slots: 1x PCI Express x16 slot; 1x PCI Express x1 slot; 2x PCI slots

IDE/SATA: 1x ATA-100 channel; 4x SATA2 ports
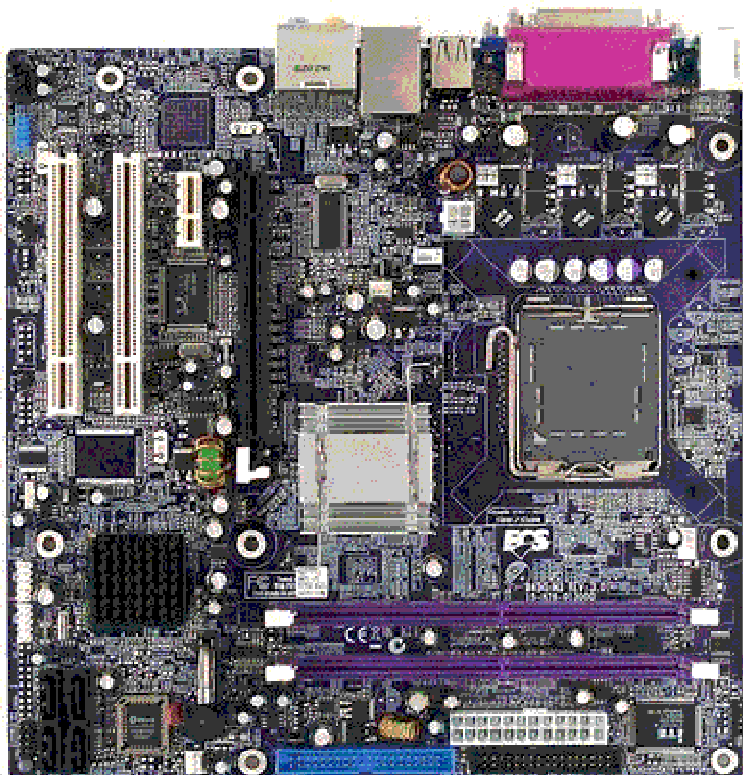
Audio: Realtek ALC883 8-channel Audio CODEC

Video: Intel Graphics Media Accelerator 950 Controller

LAN: Realtek RTL8110SC Gigabit Ethernet Controller

Ports: 8x USB 2.0 ports (4 rear, 4 by headers); 2x PS/2 ports; 1x Serial port; 1x Parallel port; 1x VGA port; 1x RJ45 LAN port; Audio I/O jack

Power Connector: 1x 24-pin ATX Power Supply connector, 1 x 4-pin ATX 12V connector

Form Factor: Micro ATX, 24.4 x 24.4 cm

Tyan Motherboard Review

DIY-Computer-Repair can help!

Tyan Motherboard (TOMCAT I7210)

As the Intel Pentium 4 era draws to a close there are few manufactures still designing and producing the P4 mother board. The Tyan Tomcat and Tiger series of Tyan Motherboards are of high quality at a reasonable price. As with other manufactures I have owned a Tomcat and a Tiger mother board. The Tiger was a 486 processor mother board but was a single processor board, it gave way to the Tomcat Pentium Dual Processor Slot A mother board.

If you want to upgrade only your mother board and keep your current processor as a way to save some $$ then this is one of the best P4 boards produced today. It has features that some of the newer boards by other manufactures lack, with the SATA raid and support of up to 4 gig of ram with dual channel support you will breath new life into your system without upgrading to the newer processors. Considering it has two 1Gbit lan ports and built in video with 8 meg of ram, this would make a very good replacement for a small business server with out the expense of the XEON processor. Very high value for your hard earned money.

S5112G2NR (TOMCAT I7210) TyanMotherboard

CPU:
Single mPGA478 ZIF socket supports Intel Pentium 4 Northwood or Prescott or Celeron processor up to 2.8GHz; FSB 533/800 MHz Chipset: Intel E7210 & 6300ESB chipset

Memory:
4x 184-pin DDR DIMM supports ECC/non-ECC DDR400/333 memory; Max up to 4GB of unbuffered memory; Dual channel support

Slots:
2x 64-bit PCI-X (3.3v) 66MHz slots
3x 32-bit 33MHz PCI 2.2 (5v) slots I

IDE /**SATA**:
2x ATA/100/66/33 IDE channels; 2x SATA ports support RAID 0,1 (Via ICH5-S); 4x SATA support RAID 0, 1, 10 (Via Silicon Image Sil3114)

Video:
ATI RAGE XL 8MB PCI graphics

LAN:

Intel 82547GI CSA GbE NIC; Intel 82541GI PCI GbE NIC

Ports:
2x PS/2 ports
2x serial ports (one via optional cable)
1x parallel header
4x USB 2.0 ports (two front via optional cable)
1x VGA
2x RJ45
Form Factor: ATX 2.03, 12 x 9.6 inch / 305 x 244 mm

Support offerings:

Online support for manuals, bois upgrades, and device drivers. One year warranty for most TYAN products. All returns must go though the reseller where item was purchased.

TYAN does do an exchange or repair of your mother board I would give their support a 9 out of 10. (Be prepared to give a full explanation of the defect, go slow; some of their techs do not speak English very well.)

ATI Video Card Review

DIY-Computer-Repair can help!

ATI AGP Video Card

One of the leaders in Video technology and the inventor of the RamDac module ATI is still producing AGP video cards along with PCI video cards. The Radeon class of video cards bring extra features to your video display. Most OEM (Original Equipment Manufacture) products have a minimum of features or add ons. The ATI corporation has all ways been the leader in pushing more features for their products. Two features that are very useful are the screen alignment and the screen flip functions.

There are other ATI AGP cards that have more ram but with the Radeon 7000 GPU all the features are the same for all cards. This card will give the average computer user all the graphic power they need to display their applications. For the home user there is a TV out feature. With the "flip" feature you can take a high resolution monitor and have it display in either Portrait or Landscape mode. If your monitor will 'flip' along it's axis you can display a very long document in the landscape mode and not have to scroll as much as you would in Portrait mode.

Mfr Part Number: 100941
Graphics controller: RADEON 7000 GPU
Memory: 64MB DDR
Bus Interface: AGP2X/4X
W/TV-out

Rating:

I am rating this video card a 8 out of 10. This is a very high quality card that will display your graphics with out problems. It will not however do well with games. Most games will require a minimum of 256 meg of DDR memory. For the business user that is not using a graphic intense program this will be the best value. The TV out feature will have moderate quality with the 64 meg of ram.

IDE vs. SATA Hard Drive Review

DIY-Computer-Repair can help!

IDE or SATA Hard Drive?

New kid on the block for hard drives, SATA, What is it? SATA stands for Serial Advanced Technology Attachment.

Before I get to SATA we need to understand what IDE is and why SATA is better.

Integrated Drive Electronics, IDE, was introduced in the early 1990's as a way to get around the built in drive tables in the bios for computers; tables that every pc had. There is a limitation on the drive size built into the tables, the limitation is calculated on: the number of heads, the number of cylinders, and the number of tracks physically contained within the drive. The maximum of all these parameters can only be 1024. There had to be a way to fool the bios when the drive is larger than 30 meg. IDE does this by telling the controller that the drive is only 30 meg. This worked for a while, then when Intel introduced the 486 processor the bios was rewritten to remove the drive tables from the bios and add the IDE controller as a function. This removed the 1024 limitation and opened the door for larger drives.

The IDE function is split into two distinct parts; the IDE interface, and the IDE controller component. The interface is just that, a way to connect the drive to the computer mother board. The controller is part of the drive, all functions but one are integrated into the electronics of the drive. The one function that is not built into the IDE controller is the drive selection. That originally was a manual function, then became a part of the bios function. The selections were master or slave, then came cable select. Cable select is by which connector on the IDE cable the drive is connected to. By removing one wire from the cable to the last connector the bios knows which drive is master and which drive is slave.

As with all devices when they are new or just introduced they are the wiz bang of the day. The speed of the IDE drives was phenomenal at the time, SCSI was struggling to just keep up. Through put had quadrupled over night. Drive size will reach beyond 200 gig. Reliability will reach a all time high of over 200,000 hours between failures. This means that the average hard drive will operate beyond the lifetime of the computer.

Your IDE drive is still a viable device, I would not throw away a perfectly good drive just to have the latest and greatest. If the drive has failed or is to small then by all means upgrade.

SATA, what is it? Why do I need it? Is it expensive?

Serial Advanced Technology Attachment or SATA:

Pros:

SATA uses the IDE controller concept on the haed drive to control the drives functions. Using two pairs of signal wires the data-connection is unidirectional. Utilizing Low Voltage Differential Signaling (LVDS) increase the signal rate to a higher capacity of **1.5 to 3.0 gigabit per second.** The 8B/10B encoding is 80% higher in efficiency than the traditional parallel transfer encoding of the IDE interface. The 8B/10B encoding is also used in the newer Ethernet, Fibre Channel, PCI Express, and other devices. With the correct controller you can use a raid array to protect your data.

Cons:

~~Only one device can be attached to a cable. This means each device requires an interface connection and a cable.~~ (Since this article has been written the manufactures have been busy, you can now get an interface that will support 16 devices!)

Rating:

I give the SATA device a rating of 9 out of 10, the reason is that each device needs it's own cable and interface, when the manufactures get around to creating a way to chain more than one device on a cable I will give it a 10 over all. When technology moves forward you gain in functionality. With the SATA device you gain an enormous speed in through put for your data, couple this with the ever increasing capacity of hard drives and you are getting even more for your hard earned dollar. If you have an older mother board you will have to purchase a SATA controller card to go with the drive, the newer motherboards have interface connectors built into them, along with the External SATA connectors for external devices. **At this time the manufactures are working on a 6 gigabyte per second devices**.

Pricing:

Contrary to popular practices the SATA devices are cheaper than the older devices, normally new technology devices cost twice to four times as much as older technology. Such as a SATA drive that has twice the capacity of an IDE drive at the same price.

This is truly a more bang for your buck deal.

AMD vs Intel

DIY-Computer-Repair can help!

Intel or AMD processor?

Why an <u>Intel</u> processor over an AMD (Advanced Micro Devices) processor? There are a few reasons. Price isn't one of them. One is the leading edge of development in the micro/nana technology is at Intel. AMD does do research and development but they lag behind Intel in most respects. The race does not have an end in sight but has lost a contestant, Motorola.

AMD was brought into the processor manufacturing business by Intel back in the 1980's. Intel could not keep up with the demand for the 8086/8088 processors so instead of farming it out overseas they farmed it out to AMD. Unfortunately there was a suit by Intel against AMD over the 286 and 386 processors claming that AMD reverse engineered the processor to design their versions of the processor. That is history this is now.

AMD seems to have a slight advantage when it comes to speed, this how ever has a draw back, a very large draw back - <mark>HEAT</mark>. All AMD processor will run at a higher operating temperature than a comparable Intel processor. Heat has a detrimental effect on devices regardless of who manufactures them. Even with more than adequate cooling the AMD processor will not last as long as an Intel processor. The cost difference between the two processors will not compensate for the increase in your electric bill, increase in power consumption to drive the processor means an increase in your power bill.

From a personal view point as a computer repair tech and systems admin I have seen AMD processors fail. At one time I had the responsibility for over 150 servers. The company I worked for insisted on Intel systems. There are always mavericks in all walks of life. I inherited the support for five servers that were AMD systems, over about four years I watched them die off, two actually melted the heat sinks to the processors. One I am not sure if the processor or the power supply killed it, it caught fire.

There is an old axiom: Buy cheap get cheap.

If you buy an AMD system today you may be buying another one in the near future.

Then again AMD may figure out how to obtain their high clock speed with out consuming so much power that the heat sink glows in the dark..........maybe.

MAC vs Intel

DIY-Computer-Repair can help!

Intel or Motorola?

Mac? MacIntosh? Apple? Why Intel over Motorola? Or even why Intel over MacIntel?

For one thing the leading edge of the computing world is Intel. Almost every advance in processor design comes from Intel engineering. Motorola has all but dropped research and development of personal computer processors. Why would anyone buy a computer manufactured by Apple when you can get the same quality at a substantially lower price by not buying a very proprietary computer.

The newer Mac computers run the same processor as any Intel system. The programs for a Mac OS are more expensive than Windows programs. Programs for the Mac OS are not as prevalent as for Windows.

Intel computer based systems add-on cards are easier to find and for the most part cheaper than Mac add-on cards. The old adage that Mac's do Graphics and Sound better than Intel systems. Try to buy a Turtle Beach sound card for a Mac. Or a ATI 9600 Graphics card for a Mac. You can make your videos, mix your tunes, and paint your pictures at half the cost with an Intel system the quality will be the same as the Mac.

The last Motorola processor that was produced is akin to the Pentium 4, with the decline in Mac sales Motorola has decided to not produce any more 68000 series processors. This is the reason for Apple to introduce the Mac with a Intel processor that will run the Mac OS called Mac OSX. This is the newest Mac OS in over five years. With the advance in technology a Operating System that is not updated periodically can not take advantage of these advances, even patching will not keep the OS up to date.

With some **Intel** based computer manufactures struggling to keep their doors open Mac has a bigger struggle. Their extreme proprietary computer may be doomed to failure, it may not happen today, tomorrow, or next year, but in the next few years Mac will be a dieing breed.

This is just my opinion, but I have seen Mac's drop from the top of the heap down to next to nothing, Apple has a spurt now and then but eventfully even the spurts will not keep the doors open at the factory.

Computer Software Reviews

DIY-Computer-Repair can help!

With the ever changing WWW there are new and improved Computer Software and services. You know that somewhere on the world wide web someone has an answer. I am going to attempt to help you get some answers to those nagging questions.

Is this a good product?
How good is the software or service support?
Does the provider have follow on updates and upgrades?

When you purchase software you are taking a pig in a poke unless some one has recommended the software product to you, you can search for the specific type of software and read the publishers description of the product, but they (in all due respect) are biased, they wrote the software!

So what are the defects?
What are the pitfalls, the problems that you will have to over come with the product, or the add on modules you will have to buy once you purchase their product?

What is the difference between basic and advanced?

As I build out my web site I will be reviewing different products, check back there often or when you are considering a purchase for a review. I will try to do the latest and greatest but there are still some pretty good software packages that are being produced that meet or exceed the latest and greatest (*and sometimes they are a lot cheaper!*)

Symantec Anti Virus   - Symantec Norton's Anti Virus program

AVG Anti Virus   - Grissoft Anti Virus program

Symantec Ghost   - Symantec Ghost a drive imaging program

ERD Commander   - Winintel Emergency Repair Disk, a way to start a dead system

BartPE   - Build an Emergency Repair CD to your specifications!

RSS Reader   - A Really Simple Syndication news reader

Advance Web Ranking - Web position ranking software

IBP & ARELIS   - Web site Search Engine optimization software

U See IT   - Parental Monitoring Software

[Tutorials for Windows](#)   - User friendly, easy to follow, free Windows tutorials

Norton Anti Virus Software Review

DIY-Computer-Repair can help!

Anti virus software, everyone has to have it, the rub is which is better at stopping a virus from infecting and destroying your data?

One offering is the Symantec's Norton AV, this product has been around for a long time originally developed by Peter Norton in the late 1980's then sold off to Symantec then merged with Microsoft the product has improved over the years.

Norton AV is the baseline for anti virus, it has the largest data base of known virus signatures. (a signature is the code of the virus that starts the process of infecting your data).

I have personal experience with the installation and use of this product. It is fairly easy to install either the personal version or the Enterprise version. I have seen this product detect and remove viruses from computers. The email function is one of the best features.

Quote Symantec web site:

> *"Detects and removes viruses and spyware Prevents virus-infected emails from spreading Includes protection updates and new product features as available throughout the renewable service period Platforms: Windows® XP Home/XP Pro/Windows Vista"*

The product is not cheap, how ever how much is your data, identity, and safety of your family or business worth?

Ratings:

Product overall: I would rate this product 9 out of 10, ease of installation and the constant updates for virus signatures. The reason for not giving this product a 10 out of 10 is that the online technical support of the product is convoluted and clumsy.

AVG Anti Virus Software Review

DIY-Computer-Repair can help!

When I started repairing computers for a living the word virus was for a cold, the flu, infecting your body.

Then things changed around 1987 or 88, a new threat to your well being had emerged. The computer virus. Bad for you, bad for business, good for criminals. To combat this growing threat there were some innovative people who saw a way to stop the threat and as always make some money. It is a completion between the hackers/criminals and you. The Anti Virus provide the means to stop them, you provide the money one way or another. It is unfortunate the company that writes the Operating System for your hardware will not incorporate the code to stop these hacker/criminals at the door way to your computer. So you pay one way or another. This is not why you stopped by to read this review, but I must be honest. Between the hackers, the AV companies, and the OS companies we are being ripped off.

Grisoft is a German owned and operated company. This product is in direct competition with Symantec. Their product will automatically update itself with out all the hassle that you have to go through with other AV programs. I have some personal experience with the program and have seen it clean a system that Symantec could not. That is not to say that it is the overall best but it is running close to Symantec. Their virus definition files do run a little behind Symantec for updates. For the cost of the program this is a wise choice.

Quote AVG web site:

> *"AVG Anti-Virus Professional*
> *Overview*
> *Providing maximum protection against viruses and potentially unwanted programs, AVG Anti-Virus is ideal for home users and small offices. It is easy to install and use, and is light on system resources.*
> *Highlights*
> *Purchase from AVG-AntiVirus.net and receive FREE Value Added Support such as Live Chat and Toll Free phone support.*
> *Free 24/7 live, professional e-mail technical support from Grisoft*
> *Real-time antivirus protection of files, e-mails, and Instant Messages*
> *Maximum security — recent certifications include VB100%, ICSA, and West Coast Labs Checkmark*
> *Free high-speed updates — automatically receive all database updates and new program versions for the duration of the license*
> *Multiple language support in one package — no need to buy a special language version."*

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Rating:

I would rate this program 9 out of 10. It is extremely easy to install and will almost configure itself. The reason for the 9 of 10 is that the virus definitions files are usually one or two days behind the virus advent (when it is first detected by an authority). Also the program does not detect a computer behind a firewall, proxy settings have to be set manually.

Norton Ghost Software Review

DIY-Computer-Repair can help!

Ghost Drive / Partition Imaging

This is one of the most innovative software programs I have came across in my twenty plus years as a hardware tech. I really believe the original company that created this program had their act together. If you need to backup your personal system, create an image for deployment across an enterprise with thousands of computers this program will save you countless dollars and many hours in time. Time is money, no?

For a comprehensive paper on the why and how to ghost a system see How to... page: Drive imaging

Quote from Symantec web site:

> *Key Features:*
> *Back up your digital music, photos, financial documents, and **everything** else on your computer in one easy step.*
> *Recover files or folders quickly, even if your operating system won't start.*
> *Work and play while Norton Ghost automatically makes backups in the background.*
> *Customize backup schedules, optimize storage media, and make on-demand backups at the click of a button.*
> *Conserve disk space and time with automatic incremental backups.*

Rating:

I am rating this program with a 10 out of 10, best of the best. You can not go wrong with this program. It is not cheap, but neither is your lost productivity. There are a couple of other programs that do the same thing and I may do a review of them. I give this program a high rating because it has been in my Tech software tool box since it was released over a decade ago. *I can not stress enough about having a good, solid backup of your data.*

Microsoft's ERD Commander Software Review

DIY-Computer-Repair can help!

Why you *need* ERD Commander.

Over the years Operating Systems have evolved from DOS to Vista. With that evolution there has been another evolution, how to fix the problems inherent with the increasingly complex environment of the computer operating system.

When NT was introduced it came on over ninety floppy disks. Then the bootable cd a couple of years later. The first three floppies would start the system and you could troubleshoot it from there, when the CD came out it had an option for troubleshooting your computer. With Windows 2000, XP, and now Vista troubleshooting your problems are no longer so simple. MS has deicide to use what they call the Emergency Recovery Console. This is a convoluted, confusing, and down right unusable program. So as with most MS products they have to do a solution, a fix, that fix is ERD Commander.

So what is ERD Commander? It is a mini XP operating system on a cd. It has a xp style desktop and tools to fix problems with a computer that will not start or you have locked your self out

I would recommend you have ERD Commander in your TS Toolbox. This will allow you to recover data from a non functional computer, it will allow you to use Ghost to put the image you made back on in the event of a hardware or software failure. You can remove hardware or software drivers that were installed and caused a blue screen when the computer restarted. There are a lot of things you can do with ERD Commander that I have not listed. **A plus is it is a bootable cd, no need for a floppy!**

Quote from Microsoft's web site

> *"When your server or workstation won't boot, you need ERD Commander 2005. ERD Commander 2005 boots dead systems directly from CD into a Windows-like repair environment. You'll have full access to the dead system's volumes, so you can diagnose and repair problems using tools located on the ERD Commander 2005 Start menu. And you'll have built-in network access to safely move data off of, or on to, the dead system. With ERD Commander 2005 you can repair a system quickly and easily, saving you time and rescuing your critical data.*
>
> *Key features:*
> *Boots dead systems directly from CD*
> *Easy, familiar Windows-like interface*
> *Intuitive Solution Wizard helps you select the right tool to correct your system issue*
> *Includes Crash Analyzer Wizard to pinpoint the cause of recent system crashes for repair*
> *Allows complete disk sanitizing/data removal with Disk Wipe utility*

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Includes the Locksmith utility to reset lost Administrator passwords
Includes FileRestore so that you can quickly find and recover deleted files
Provides access to XP Restore Points on unbootable Windows XP systems
Detect malware and other applications that may be consuming system resources
Compares key info on unbootable systems with that of a working system for diagnosis
and troubleshooting
Automatically identifies and replaces critical system files that have become corrupt
Allows for formatting and partitioning of disks
Provides emergency removal capability for faulty hotfixes
Built-in network access to safely copy data to/from dead systems
Repair and diagnostic tools located on Start menu
Repair tools include System Restore tool, System File Repair, Service and Driver
Manager, Hotfix Uninstall Wizard, Locksmith, Registry Editor, Explorer, Disk
Management, and Command Prompt
Data recovery tools include Disk Commander and FileRestore
Diagnostic tools include Crash Analyzer Wizard, System Compare, Autoruns, Event Log
Viewer, System Information, TCP/IP Configuration, and Logical volumes utilities
Compatible with Windows NT, 2000, XP, and Server 2003."

Pitfalls or other things you will need with ERD Commander:

One thing that comes to mind is the amount of support built into this program. If you have a system that is a year older than the version of ERD you have there is a good chance that all the device drivers you will need are on the cd. If you have a newer system you may have to get drivers for the video, any raid array controller, or network card you have in the system. Another draw back to the cd is that if you want to use a recovery tool such as Ghost you will have to have it on a separate disk or device like a usb flash drive or external hard drive.

Rating:

Because this program is the only one of its kind (there are some kludge imitations on the web, I do not recommend trusting your data or business to a kludge) and I have used it since it was first introduced many years ago I will rate it 8 of 10. The reason for the rating is MS is making you buy a product that they had to produce instead of incorporating it in the cd that the OS installation comes on and remove the ER console that is useless.

Now the bad news: MS in it's infinite wisdom has discontinued this product. Because 'Vista has the most comprehensive recovery suite built into the OS'. You can still find the ERD Commander and the Winterals CD for sale by searching the internet.

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BartPE Software Review

DIY-Computer-Repair can help!

A review of BartPE and PE Builder

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What is BartPE and PE Builder?

Bart'sPE Builder helps you build a BartPE (Bart Preinstalled Environment) bootable Windows CD-Rom or DVD from the original Windows XP or Windows Server 2003 installation/setup CD, very suitable for PC maintenance tasks.

It will give you a complete Win32 environment with network support, a graphical user interface (800x600) and FAT/NTFS/CDFS filesystem support. Very handy for burn-in testing systems with no OS, rescuing files to a network share, virus scan and so on.
This will replace any Dos bootdisk in no time
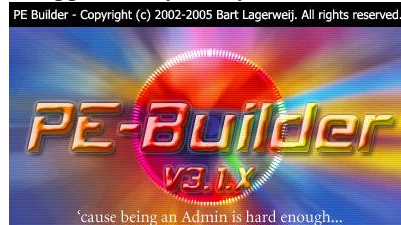
▶**Introduction**
PE Builder is not a Microsoft product and does not create Microsoft Windows Preinstallation Environment (Windows PE). Using PE Builder does not grant you a license to Microsoft Windows PE or to use the Windows XP or Server 2003 binaries in a manner other than stated in the End-User License Agreement included in your version of Microsoft Windows XP or Windows Server 2003. Microsoft has not reviewed or tested PE Builder and does not endorse its use.

Please do not contact Microsoft for support on the preinstallation environment that has been created by PE Builder!
Microsoft does not provide support for PE Builder or for the preinstallation environment created by PE Builder.

The PE Builder program (pebuilder.exe) runs on Windows 2000/XP/2003/BartPE. It does **not** run on Windows NT4/ME/9x.

To avoid any confusion, the bootable CD generated by PE Builder should be called by its nickname BartPE!

Because Microsoft in it's infinite wisdom has decided that the new 'Recovery Console' in Vista and Windows Server 2008 are more than adequate [chough, chough!] it has discontinued support and selling ERD Commander.

I have used BartPE for some years, I originally found Nu2 about seven years ago when I was looking [research!] for some obscure drivers for a network card that someone in their option decided to throw away the driver support disk.

From making boot floppies to making a recovery CD Nu2 has done an excellent job. I have build all versions of the BartPE boot CD's. I carry them when I go out on jobs. I have even converted one version to a bootable USB flash drive, now that will save your pocket!

With ERD Commander you have to know how to modify an ISO image to insert programs you want on the CD, with Bart's PE Builder you can add the programs, tools, or utilities prior to building the boot CD.

The only drawback to creating your own bootable CD with Bart's PE Builder is that you have to know what drivers to add to the CD, in other words you have to know your target hardware. The PE Builder does have a lot of generic drivers for USB, SCSI Drives, RAID Array, and other support.

If you are going to use BartPE for your TS Toolbox I suggest you use rewriteable cd's until you have the build process down and a good tested cd.

Rating:

I am rating this 9 out of 10, why 9 of 10? Because this is not a buy it and run it type of deal. You need to build your CD and you need to know what hardware you are going to build the CD for. Using the generic drivers may or **MAY NOT** work for your environment.

Here is the web page to get you started: Bart's Preinstalled Environment (BartPE) bootable live windows CD/DVD www.nu2.nu

RSS Reader Software Review

DIY-Computer-Repair can help!

Perhaps your have seen this: **RSS** or **XML** and have wondered what these icons mean. **They are the RSS Feed icons, more commonly known as a blog.** RSS we see it on web pages, people talk about it. But what is it? RSS stands for Really Simple Syndication. This is what the Bloggers use to get their message out. You can use your web browser to read the blogs by subscribing to them when you see the RSS icon. Or you can use a news reader and have all your favorite blogs in one place. The advantage to the RSS Reader (**see link to download this fine program**) is you can set a schedule to get all the blogs in one hour, one day, on week, or one month. Any rss feed will work with the RSS Reader, from ABC news to Wall Street, there are hundreds of categories you can chose from. Your favorite web site may have a blog, you can keep up with changes as the webmaster adds new pages or features. You can subscribe to articles with a rss feed, maybe you follow a certain author and he/she has a blog, catch their latest article as it is published.

RSS Reader is fairly simple to setup, then subscribe to the feeds. Once you subscribe to your feeds the you can schedule the retrieval of the articles. Set back an read about what is going on with your feeds.

How it works, once you have your reader installed, go to your favorite web site, find the xml or rss icon, right click on the icon and select "Copy Shotcut" then in the RSS Reader you click on the "+" sign or "Add" button, the reader will paste the xml code into the text box, you click on next, if the feed is a "valid" feed it will ask you where you want to put the feed name, once it is there then you can schedule how often it updates the feed. Happy blogging!

Link: RSS Reader home page

Ratings:

I am rating this program 9 out of 10. It a **free** program that works with almost but not all feeds, I have came across a couple of feeds that the reader will not log on to. Also it has crashed a couple of times on me, this may be me or my system because at times I have a lot of open windows. So if you are a blog reader or even a poster to blogs this is a fine program with all the features of the high cost programs, I recommend it not because it is free, but because it is a well designed and fairly comprehensive rss reader.

Note: The same publisher has a RSS Publisher, this program will publish your blog, you should research how to publish and have a site to publish to before downloading and setting this program up.

Advance Web Ranking Software Review

DIY-Computer-Repair can help!

For those that have a web site, this is for you. Advance Web Ranking is a program that will go to all the SE's that you select and get your web sites page rank.

Now that may sound a like it would not be much work but have you went to over 800 Search Engines and checked where your web site is ranked by keyword and against your competition? Quite a daunting task.

When you setup the program you select your keywords, which Search Engines you want to check and list the competitions web sites. The program is fairly fast but if you have a long list of keywords, select all the available Search Engines, and have a lot of competition the program will take some time to complete.

I have used this program to follow my web sites progress since I started them. Sometimes checking the rank of your web site can be dishearting, seeing it at the bottom of the list. But by checking on the web site's progress as you modify the keywords and content you can see if the improvements are working with in two days. I made some changes to this web site on a week end afternoon and by Tuesday I had moved up by three positions. Now you may think that three positions is not a big deal but if you are number 12 on a keyword search that returns 1000+ web sites you are on the second page, moving up by 3 puts your site on the first page. Conversely lets say you changed a keyword on one page and in a couple of days your page had slipped three or four positions, you may have moved off of the first page to the second page.

Most searchers will not go to the second page of a search return, if they don't find what they are looking for on the first page they revise their search term and try again. So it is important that your web site be on the first page for the keywords you have on that page.

Advanced Web Ranking will help you analyze your web site's position and the competition. When you modify a page you can track its progress if it is going up or down. You can see each keywords rank by search engine, or by page. You can also see your web sites overall rank in comparison with the top fifty sites by keyword. This is very important for those that rely on traffic by keyword search. if you are below 10 you will need to add content appropriate to the keyword to rank higher and push the competition out of the higher ranking.

The program also has an overview of your sites progress, it lists all of your keywords and where they rank overall. This gives you a quick view of where you rank for each keyword. You can check your keywords by each SE you have listed, the program will list

the web page name and it's rank on that SE. Such as Google, you have the web page, the position on the page and the page number plus the best rank since the first time you ran the program. It gives you a history of where your web site is where it has been and where it is going.

The program has three distinct license modes, Standard, Professional, and Enterprise. Standard gives you the Project, Update, Schedule, and Filters. The Tools features have some tools that are not available in the Standard version. If you are using this program for your business these features are all you really need to track one or two web sites. If you are a web designer and want the Reports, Triggers, and Advanced Tools you will have to upgrade to Professional or Enterprise.

Ranking:

I am ranking this program 9 of 10, the reason for the 9 instead of 10 is that the 30 day trial gives you all the features then when you buy it you lose the Reports, Edit Reports, Triggers, and some of the Tools. The publisher's web site does not tell you that when you purchase the product you will not have all the features the trial version had. Overall this program is very useful in tracking your web site's progress, and will assist you in modifying your keywords to get the highest ranking possible. Purchase only if you are serious about moving your web site up in the keyword ranking wars. Recommended for Web Designers and SEO's that work on client web sites.

Axandra IBP&Arelis Software Review

DIY-Computer-Repair can help!

Quote Axandra Web page at http://www.axandra.com/

"Successful search engine optimization and website promotion with proven SEO software tools."

"Axandra is a market leader for website promotion and search engine optimization software tools. Thousands of businesses all over the world use our products to get more visitors, more customers and more sales. We offer the tools you need to make your website successful: "

IF you are a web developer or you support web sites this software would be a fair choice. The program is a combination of two programs that assist the web developer get a new web site up to speed or a web master analyize a web site to find out why the web site is doing poorly in page ranking.

There are numerous tools integrated into the program such as:

IBP

Top 10 Web Page Optimizer
Top 10 Inbound Link Optimizer
Search Engine Submitter
Directory Submitter

ARELIS

Top 10 inbound Link Optimizer.
Find web sites with a link suggestion form.
Find web sites that link to your competitors.
Find sites by keyword search.
Find web sites that already link to you.

With the Web page optimizer you have the option to compare your site with the 10 top sites that match your keywords. Your report will list web site and compare it with your web site by keyword. Each section of the report will give you recommendations and hints on how to improve your site to increase the page rank standings.

The top 10 inbound link optimizer searches the top 10 web sites for inbound links. It presents a report for the top 10 sites and your site. The report will give recommendations and hints on gaining quality inbound links for your web site.

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One of the better features of this program is the Search Engine Submitter. There are two modes for the SE submitter, automatic and simi-automatic. In the automatic mode you fill out the form with the web site url, title, keywords, and description along with the pertinent information for the web site owner/web master. Press start and the program submits your web site to around three hundred search engines.

The simi-automatic SE submitter requires user intervention and is very tedious, sometimes it hangs or doesn't go to the correct page for the submission on the web site.

The Directory Submitter is also very tedious to use, has the same issues as the simi-automatic se submitter.

The Custom Directory Submitter will allow you to submit to a Directory that requires conformation at the time of submission.

One other feature is the Reports. With the reports you can customize your header and footer for your company for submission to your customer.

Rating:

I am rating this program 6 out of 10. The reason for the rating is that the program has serious issues with connection to the internet. If you ran the program from a computer with at direct internet connection (one of my tests) it has a tendency to hang when a web page is being loaded. From behind a firewall (which is normal for most corporations and anyone who wants to protect their data.) the web functions are either extremely slow or non-existent. Another problem with the program is that it does not deliver the promises the web site professes the program will do. I found that with the top 10 page optimizer that the analysis is very generic, to be useful you have to read between the lines and do some assumptions, if you do not have a lot of experience with building web sites the assumptions can hurt your web site. This program is expensive, to get the advanced features you have to purchase them. I don't think that the automatic SE submitter for 300 search engines is worth the cost of the program.

U See IT

DIY-Computer-Repair can help!

Awareness Starts With You!
www.USeeIT.org

This is a fine program all parents need to install on any computer their child uses.
The main use for this program is to monitor where/when/how your child is using a
computer when they are not supervised. This is a keylogger/screen grabber type software.
It has locks to keep your child from stopping the program or uninstalling it with out your
knowledge.

Normally I am against using keylogger and screen grabber software, the intrusion to
privacy is very prelevant in this day of terrorism. The line is drawn at your child's safety
and what the internet brings into your home. You are responsible for your child's actions,
you alone have the responsibly not only to protect your child but to teach them to act
responsibly also. Most parents have less computer knowledge than their children, that is
why this program is important. The news is full of headlines about young children being
lured by a child rapist, about children being kidnapped, and other things that these slime
do to get at your child.

A few things about this program that you should know:

1) **To enable the program it requires a direct connection to the internet,** if you have a
firewall or have the built in firewall activated you need to either move the computer from
behind the firewall or disable the built in firewall. Once it is activated you can reverse the
procedure for the firewall.

2) **This is a *Free* program, the publisher would like a donation and I agree,** high
quality programs don't grow on trees, programmers need to eat and keep warm too!
Please donate if you download it.

3) **The logging program will email the logs to a email account once a month** to keep
the child from knowing they are being watched (if that is what you want to do) it costs $5
US to activate the email program.

Rating:

I am rating this program 10 of 10. This is an excellent program to help parents keep an
eye on what their children are doing when surfing the internet. There is a lot of good
information and things to do on the internet, there is also a lot of dangerous and

unscrupulous predators that want to hurt your child out there also. **I highly recommend this program to all parents.**

Make your web site work better with these Web Site Tools

DIY-Computer-Repair can help!

Web site tools for everyone!

Some of these tools are 'nice to have', some are a necessity. Some of the tools I have an affiliate with others are just the link to the actual tool. You will find that most are shareware with various days free. I have used all these tools and recommend them to my fellow web developers.

This is a very nice site map generator, I like it because it will allow you to create a human site map with columns, instead of scrolling forever you can create two, three, or even four columns for you site map, it also has a title feature. Have some broken links and can't locate them? This is a nice tool to find those elusive broken links! I recommend this program.
A1 Sitemap Generator www.micro-sys.dk

This analyzer has a link to the WC3 web page valuator, very nice. I am still evaluating this program.
A1 Website Analyzer   www.micro-sys.dk

This website downloader will download your web site to your hard drive including graphics if you desire. I am still evaluating this program.
A1 Website Download   www.micro-sys.dk

Adobe Acrobat reader, a must for documents.
Acrobat Reader   www.acrobat-reader-ib.com

I use this to get a good feel for my web site, it will show you broken links and create the Google and Yahoo xml site maps if you need one for a non SBI site. I recommend this program.
GSiteCrawler: Google Sitemap Generator for Windows
gsitecrawler.com
If you subscribe to RSS feeds then this is very good rss/xml reader, I use it to monitor my rss feeds for my web sites and for the SBI forums, better than using your web browser. I recommend this program
RSS Reader home page
www.rssreader.com
This is a free Directory Submitter, the free version will give you 350 directories to submit to, it has a data base that it will download from the license server each time you start the

program. I recommend this program.

LINK DIRECTORY SUBMITTER   www.directorysubmitter.com

When you are ready to start submitting articles here is a nice program to assist you in getting your articles to as many article directories as possible with the minimum of work!

Article Submitter — Get super high quality - one way links!   articlesubmitter.imwishlist.com

Questions & Answers from DIY-Computer-Repair!

Check through these trouble shooting questions for the answer to your hardware or Operating System problem. The answer may be here! These are questions that I answered in various forums on the internet.

Question:

How do you over clock your computer? Speed Up Your Computer

Answer:

You need two things before you can over clock a system:
1) A system that the bios supports mote than one clock multiplier..
2) Adequate cooling for the processor once you bump up the multiplier.

First research, read, read, and read some more.

Then insure your processor has adequate cooling. Go to the processor web site and check the spec's on the processor they should provide the normal operating temperature.

To check your operating temp before you add a bigger heat sink and fan go into your bios and check the normal temperature.

Then install the new heat sink and fan, don't forget to apply new heat sink grease (this will facilitate heat transfer from the processor to the heat sink). Check your operating temperature, how much did it drop if any?
Figure 2 degrees per multiplier to be on the safe side.

I have a 2.8Ghz P4 that runs at 145* normal temp, at 3.04GHz it runs at 151* so when I step up the multiple and NOT the voltage I get a six degree increase in temperature.

One more thing: memory does not like to be messed with, if your processor is a 533 MHZ FSB leave it at that!

Hope this helps and you don't have to buy a new motherboard and processor.

Question:

==My desktop computer stopped coming on last week.==

Answer:
Do you get any lights on the front panel when you power it up?
If not then something inside has failed and gone to ground.

First check the video cable and monitor, all tight? Monitor have a power light? Do you have another monitor you can connect to see if you get a display?

Monitor is ok then go on to the next steps:

If something has failed you will have to run through a troubleshooting check list like this:
Disconnect all the drive power cables, hard drive, CD ROM, Floppy.

Power up - Does the system try to start - any thing on the monitor?

If it still doesn't power up take out the memory, power up, does the motherboard cause the speaker to emit beeps?

No - the motherboard or processor has failed.

Question:

==Please help me with my system is booting very slow?==

Answer:
Your problem is NOT the hard drive, a new faster, bigger hard drive will not make the system start faster!

Your system needs to be optimized, remove any non essential programs from the startup menu, remove any non essential services from starting.

The convenience of programs auto-starting are dragging your system down.

Question:

My laptop just went off, when I powered it again the indicator on laptop lighted for few seconds n went off?

Answer:
Could be the power adapter, the power supply, or the battery.

Try this:

Disconnect the power adapter, remove the battery for a minute or so. Put the battery back in then power up on the battery.

If this fails then your power supply is at fault.

If it works then you had a temporary glitch in the power management module built into the power supply.

Hope this helps...

Question:

How do I fix my monitor/screen which has lines running through it?

Answer:
Either the cable from the monitor to the computer has come loose or the monitor has failed.

Try this: Power down both, disconnect the cable from the computer, some monitors the cable will disconnect there also. Reconnect the cable, power up. Good?

If this does not fix the problem then it is more than likely the monitor.

I doubt the video card has failed, when the video card goes you either don't get any indication that the computer is on or your computer is extremely slow.

Question:

Computer Troubles?
Hey I built a computer and I turned it on. It shows an MSI screen does some stuff then it goes black with a little blinking underscore at the top left hand corner.

Answer:
Your hard drive is considered a raw drive until you partition and format it then install a boot sector and a operating system.

The manual that came with the mother board should have the key stroke to get into the BIOS. Go into the bios and see if the hard drive has been found by the BIOS.

While you are at it check all the other hardware that you installed to see if your BIOS see it.

Once you get that done insert your Install disk (CD/Floppy) into the appropriate drive, create the partition, format, and install the OS.

Question:

On start up screen stays on stand by.?

Answer:
If this is a laptop power it down, remove the ac adapter, remove the battery.

Power up on battery then go into the BIOS settings, in the power setting set the STBY time out higher. Depending on how you use your computer I would set it for over an hour at least more if you do not leave the system idle for long periods of time.

If this is a desktop power it down, power up and go into the BIOS settings, go to power settings and set the time out on the power.

Both laptop and desktop: Go into the Power settings from the Control Panel and change the time out for stand by.

Question:

How to check if processor or motherboard going bad and or what signs to pay close attention to?

Answer:
There isn't one thing that points to the processor or motherboard if the system will start. If it fails to start or when it is powered up it beeps with steady beeps [Phoenix and Award bios] it is the processor.

Different symptoms are related to one or more components like:
Frequent lockups - processor, memory, hard drive, virus infected

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Slow response- memory, hard drive, processor, virus infected

So with out more information it is hard to determine what your problem is...

Question:

Partition ? how to partition a drive os all ready installed

Answer:
If the os is already installed and it is the complete size of the drive then it is not easy to change and if you do change the size of the partition you will incur problems with the OS.

There is a couple of programs that will do it, one is called Partition Magic. I have used it a couple of times in an emergency but it is not a reliable process.

If you have extra space on the hard drive you can create another partition with the System Manager, go to Disk Management it will show as unused.

Question:

How do I change my laptop screen from going completely off? on my old laptop it just dimmed the screen?

Answer:
Your system is going into standby when you close the lid. You need to set the power settings to Never, one of the options is 'when I close the screen'. You also have to go into the BIOS settings and change the power settings there also, different computers have different setting so I can't tell you exactly what to change.

Question:

How can i fix my 'integral' 1gb USB?
It does not work when i plug it into my usb cable!

Answer:
If your USB flash drive is not recognized by your computer chances are that it has failed.

You can try:

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The device on another computer.
A different device on your usb cable.

If it works on another computer it is your computer with the problem. If it fails to be recognized on another commuter you need to replace it any data on the device is gone.

If you connect a different device to the cable and your computer doesn't recognize it, try another cable. The cable may be at fault.

Question:

I am having a problem with my hard disk. It is a 80 GB hard disk. I have formatted whole of the hard disk with a disk manager(DM) cd, now it is just showing 33.8 GB in the hard disk BIOS settings, what shall I do now please help me.

Answer:

Is this drive is a IDE or SATA? If it is a SATA drive you need to have a SATA device driver installed. The Operating System may not have installed the SATA driver when you installed the OS or added the drive. This happens occasionally when the OS sees the drive but doesn't recognize it as a SATA.

Power down the system. disconnect the drive power cable, power up the system, go to the BIOS and check that the drive has dropped out of the listing. Save your settings, power off the computer and reconnect the drive, power up the system, go to BIOS, check the drive to see if it is correct. If this does not correct the problem then I would believe that the hard drive has a failed.

IF you have another system you could check by installing it on that system. Power it down, install, power up, go to BIOS and see what the BIOS lists for the drive.

Hope this helps

Question:

gateway computer problem
My computer sounds like it is booting up and monitor led light is green, but my monitor stays black.

Answer:

If you get the power light, the drive lights, and drive activity when you power you the computer but no video the problem could be the video cable has become disconnected.

Check the cable, is it seated on the computer video output port? If the cable is dual ended,

[by this I mean you can disconnect it from both the computer and monitor] check both ends of the cable, insure they are seated fully.

Have you changed anything on the computer? Did you change the resolution from the Operating System? If you changed anything, try to remember what you changed and undo the change.

If none of the above fixes work then I would say your video adapter has failed. If it is an embedded adapter you may be able to add a video adapter to the system. Is it under warranty still? Gateway may replace the motherboard.

Hope this helps...

Question:

I have a Median Titanium MD 8386 XL (Model PC MT 7) PC, which freezes after about 20 minuets of booting it, when I reboot the PC freezes after only 5 minuets, and every time you reboot it freezes, quicker until it stays frozen as soon as it is booted, then when I turn it off it turns itself back on, it is starting to drive me crazy, I have fitted new power supply but it still does the same.

Answer:

If the computer is a new computer and it freezes up then you have either mismatched RAM, insignificant cooling, or a BIOS setting that is over driving the Processor/Memory. Check with the retailer about a repair.

If you have changed or added memory remove the new memory, compare with the old install correct memory.

If you have changed any BIOS settings, reset them.

If none of the above are causing your problems try adding more cooling, ie add a fan or two, move the computer to an area where it gets better airflow from the surrounding room.

The last thing that would cause a computer to freeze up and show the symptoms you describe would be a motherboard or processor that is failing.

Question:

I updated my pc memory from 2 256 modules to 2 1 gig modules when I put in the first one the computer booted normal, when replaced the second one and try to turn on the pc

there is only a blinking red light, I tried putting the original modules back on but the blinking red light doesn't go away. I was very careful not to shock my pc with static so I know that is not the issues;
what should I do????

Answer:

One thing comes to mind, that is that the memory you have is not supported by the BIOS/Motherboard.

Try taking out the battery, leave it out for a couple of minutes. Put the battery back in, with out any memory installed power up the system, the speaker should beep, maybe two short and one long beep, or long then short over and over.

Power the system off and then insert the one 256 memory module, then power it up, go into your BIOS settings. If the system comes up and you get into the BIOS, save the settings and power it down.

You can then try the second 1 gig module, if you get the same results I would say you have a bad module.

If the system takes the 1 gig module with out problems then your mother board will not support 2 gig, it has to have the 256 meg module.

Hope this helps.

Question:

My computer is becoming very slow responding. I'm running win .Xp home. I did defrag and disc clean but nothing help. My computer is almost new. Please help. Thank you.

Answer:

Different things cause a computer to be slow. So I will make some suggestions:

Anti-virus (av)
Anti-spyware (as)
Move your swap file to a second drive or volume if you have one.
And Optimize your system

Having the av and as programs and clean out any virus and spyware you have picked up by surfing the Internet.

Open your browser and delete all temp files.

Change your back ground to be less graphic - the Windows XP theme uses 40% of your processing power just to display it, even on the latest and greatest processor.

Last if you have less than 512 meg of ram increase your ram.

For more detail on optimization have a look at this site:

Question:

when i turn off my computer and then press on(my mouse) .the computer will start up How can I do about this problem

Answer:

This is a function of your computer BIOS power settings. Each BIOS has a different keystroke to get in to the set up settings. You will have to check the manual or go to the computer manufacture to get the keystroke to get to the BIOS setup.

Hope this helps...

Question:

HI, I have a HP Pavillion DV4000 and when I start my computer there appears a blue box that says "LIMIT" and then the amount of time (15min) and that count down starts to shutdown. This repeats for several times... what can I do?

Answer:

How long have you had the computer? If you have a 120 day evaluation or Demo OS installed this could be the indication that the time limit has expired. I haven't seen this problem in my career so really don't know.

Have you tried pressing F8 and going into safe mode? It may be a virus or a hoax someone has loaded on your computer. Once in safe mode clean the system of virus and spyware, check the display settings for the theme that loads when in normal operation.

If all these things do not work I would suggest reloading your computer. If you have data on the system that you want before you reload it I suggest you get a bootable floppy or cd that has access to NTFS partitions and copy your data off before installing a new OS, you never know what is going to be overwritten when you load a OS.

Question:

I hope you can help solve my issue.
After every Windows startup, there is a short moment when all applications fail to respond except Explorer.
I can navigate through folders and files, but if I try to open any file, nothing happens.
This "freezing" period lasts from 2 to 6 minutes. There is one important note: I'm using a notebook version of Windows XP on my personal computer. Could this be the reason behind these issues?
Below are my pc specifications. Thank you for your time,

Mainboard : MSI MS-7181
Chipset : VIA K8M800 (VT8380)
Processor: AMD Athlon 64 3400+ @ 2400 MHz,
Memory: 1GB DDR-SDRAM
Video card: ATI Radeon 9600 Series (V350),
OS: Windows XP Home Edition -- Service Pack 2

Answer:

I don't think the version of the OS is the problem.

When you start up something is running in the background. I would suspect a virus.

If you have a virus and anti spyware programs update them or install them (you can find fairly decent one free on the internet) and then start the system in safe mode.

To get to safe mode, restart your system and press F8 as soon as the BIOS screen disappears. In safe mode run both the anit virus and spyware programs to clean your system.

If after cleaning the system the issue is still there then you have a service that is hogging the cpu and memory at start up. What it is at this time is unknown, you will have to evaluate each service to see if you want to turn it off.

Hope this helps...

Question:

i just recently bought a laptop for myself and left the home PC for my siblings. my ISP (ATT formally SBC) provides wireless internet because of the modem i have. i was able

to easily set up the wireless connection on my laptop within 30 mins. the problem is that the home PC isn't wanting to work with the Internet explorer or the att web browser. only about two days of having my laptop the internet stopped working on the original computer. the house PC is still connected to the modem and everything the only problem is that i can't get the web browser to come up on it. if i could get any help it would be greatly appreciated.

Answer:

This is normal for ISP's, what has happened is that the ISP contract says you will only have one PC connected to the modem. You can either call the ISP and have them reset the modem to accept the laptop or the PC or you can add a router between the modem and your pc's, then clone the PC MAC code.

Then both systems will have access.

Question:

Sometimes when I'm online everything shuts down and I get a screen warning something to the effect that windows needs to shut down...physical memory dump now taking place. check bios, etc etc. What's this?

Answer:

When your system does a 'Memory Dump' it is recording the problem for you. To find out what the problem is you have to contact Microsoft Support and send them the file. This is not a free service.

What you can try is turn off any programs that autorun when your system starts, also look at your services and turn off any you don't need.

Normally when a system dumps it is having a driver conflict, have you installed any new hardware? Upgraded drivers either yourself or through Microsoft Auto update? If you have then either remove the hardware, get newer drivers, or roll back those drivers.

Hope this helps...

About the author of DIY-Computer-Repair!

You can Build a custom pc with diy-computer-repair!

I am located in Sunny Glendale, Arizona.

I started my first career in 1966 as a member of the U.S. Air Force. As an Airman I went to tech school on the USAF's latest and greatest Jet Fighters (F-102, F-105, F-106, F-4, and T-38). After over 20 years of dedicated duty, and working on the F-16, I decided that I need a change in life and retired from Active Duty.

I went back to school and graduated from Glendale Community Collage with an AAS (Associate Applied Science) in Computer Design Technology. After a long career as computer repair tech and network administrator for a large company, I decided to change careers once again.

I built diy-computer-repair to use my knowledge as an "Authorized Computer Repair Technician" and all around mechanic to help others gain their confidence to fix their computer problems.

Computers have always been "complex" but if a guy that grew up out in the boonies in Wyoming can fix 'em you can also!

And remember - "There is no such thing as a **DUMB** question".

Thinking of building your own web site?
This is how I built mine.

Or click here for a video about SBI

www.diy-computer-repair.com/diy-sbi-tv.html