Refurbishing Steps for Success

Obtaining Donations and Working with Laptops

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www.microsoft.com/refurbishedpcs
Obtaining Donations

- Sources of donations include:
  - Public
  - Businesses
  - Governmental agencies
  - Corporations
- Donations are easier to get if donors know you will protect their information on hard drives, cell phones, flash drives and other devices containing information.
- Donors will give if they know you are helping schools, non-profits or low-income families through reuse and not just recycling.
- Educate donors that reuse is better for the environment and about the need to have access to technology for everyone and not just those who can easily afford it.
- Form a partnership with schools. Let them encourage businesses and others to donate to you so you can help the school by furnishing good, licensed computers. The school will help with publicity. You can also get the discards from the schools to refurbish for low-income families. Teachers wanting computers in their classrooms can be a big help.
- Use your web site to publicize the good results you have had. Success breeds additional donations. Have free events to accept donations. Create a simple brochure.
- Talk to anyone working for a large business or agency where many computers are being used. Hospitals can be a good source as well as universities. Anyone using large quantities of computers will need to upgrade a find an outlet for their discards. If you can provide a social benefit and make the transfer easier, they will select your program.
Networking for Donations – Ask, Ask, Ask!

- Ask your bank, insurance company or vendors what they do with their old computers. Contact everyone with whom you are doing business. Get contact information for the person in charge of buying computers as they will also know how the old systems are being discarded.

- Talk to the warehouse manager where surplus computers are stored. Tell them that your group would help schools and will take all electronic equipment (won't pick and choose). Make his life easier. You will get repeat business and referrals to other warehouse managers.

- Talk to governmental agencies. Assure them that their donations will be used in their district to help students or families become educated about technology that will help their educational goals and ability to get jobs. Find out the name of the person in charge of making the decision.

- Corporations often have newer equipment and different needs. Some have a social conscience but others want to have certain services performed such as: removal of stickers identifying the corporation, a survey including the serial numbers, make and models of donations and a complete wipe of hard drives or the destruction of the hard drives. Some corporations may want assistance in physically removing computer systems from their offices. Other corporations with newer equipment may want to sell their equipment. Some refurbishers offer to share in the eventual sales of the systems for higher end systems.

- Publicity explaining the good results you have had can be your easiest road to getting more donors. Develop a newsletter or brochure to hand out. Use photos or videos.
Working with laptop computers

- Using the correct power adapter
- Triaging laptops
- Tools needed
- Upgrading the memory
- Perform a bios upgrade
- Loading software
- Wireless networking and USB 2.0
- Batteries
- Docking stations
- Demanufacturing laptops
The power adapters vary depending upon the make and model of the laptop. It is critical to use the correct adapter. Check the output volts and amps on the back of the laptop as well as the listing on the adapter. Also check the polarity of the connector. You will see a diagram similar to:

This indicates that the center of the adapter is positive and the outer part is negative. This must match the settings of the laptop.

This is an example of an universal laptop adapter kit selling for around $20.00. The tips each work for different brands and models so if you buy a kit make sure it contains the models you will be using most of the time. In general it is better to use the specific adapter for the laptop you are testing.
Triaging laptops

- Sort and set aside obviously damaged stripped out laptops.
- Find the power adapters for the models to be tested. Plug into power.
- Boot to the bios to find the speed of the processor, the amount of memory and the size of the hard drive. If the laptop is missing memory, you may need to install some RAM before proceeding.
- Wipe the hard drive using your disk-wiping program. If the hard drive is too small you may decide to remove it and degauss the drive or drill a hole through the drive using a drill press rather than taking the time to wipe it. Be sure to keep the hard drive caddy. One of the problems with refurbishing laptops is the practice of donors removing hard drives prior to donating them and not supplying the caddies. Without a caddy, the laptop is not of much use. Caddies are often proprietary and specific to certain manufacturers and models.
- Label the laptop with the information: CPU speed, RAM, and hard drive size including the information “wiped”. Set aside to be loaded.
- When you have completed this step you should have at least three stacks of laptops: (1) to be repaired or stored until parts are received, (2) ready to be loaded, (3) to be parted out – the screen may be sold if it is in good condition and not scratched.
Tools needed

- Small Phillips, torx and flat screwdrivers are needed. A handy tool kit can be useful for about $20. You really need #00 Phillips and flat head screwdrivers for laptops as well as a small torx. A flashlight or magnifying glass can be useful.

Older laptops typically have USB 1.0 ports. You can load software much more quickly if you insert a USB 2.0 PC Card. This card costs $10 and supports 4 ports.

This is an example of a portable, external USB hard drive. The costs vary depending upon the amount of storage. One advantage of the portable drive is that it does not need a power supply. Coming soon are external solid state drives. The prices are coming down quickly and the speed will be much improved. Using the USB PC Card and this drive makes loading images very easy.
Survey the notebook’s assets

- Boot to the notebook’s bios. Note the bios version number. Notebooks that have been sitting for some time often have dead batteries – onboard as well as removable. Some bios have the option to discharge or recharge the battery. If you have wiped the hard drive, the battery should have been charged during the time it took to do the wipe.
- Take an inventory of the notebook. Does it have a battery, a floppy drive, an optical drive (CD or DVD)? Most notebooks have a CD or floppy drive but not necessarily both. In order to load the software it would preferable if the notebook would have an Ethernet adapter (RJ45 connection) or a CD drive and a USB connection or PC card slot for the USB PC Card.
- If the laptop has sufficient resources to meet your needs you can proceed to the step of upgrading the bios. Use your web browser to see if there is a bios upgrade.
- Many laptops have interchangeable floppy and CD drives. You can slide out the CD and insert the floppy drive to upgrade the bios if needed. The parts are proprietary and only work with certain makes and models. With laptops it is necessary to have a good storage system so that power supplies, floppy drives, CD drives, etc can be sorted and stored for each type of laptop. You can also use an external USB floppy drive. Many of the newer bios update programs can be run from the computer and do not need a floppy drive. Newer computers do not have floppy drives.
Load the software

- Laptops can be loaded in a variety of ways. If you have created a sysprep image using the discussion in the “Loading Software” deck you can restore the image to the laptop using disk imaging software. Once the laptop is restarted it will load automatically. After activating the Microsoft XP license you can go to the Device Manager to see if you need any additional drivers. If you need drivers go to the manufacturers web page and look them up depending upon the model of laptop. The drivers can be stored in a shared folder on your server or stored on a CD.

- If you don’t have a sysprep image, you will need to do a fresh install of the software and updates as well as finding all of the needed drivers.

- At this point you should update the image of your completed notebook installation to the external USB hard drive or to your network server. The Clonezilla live CD is very fast and free. An example of an image saved might be 10-10-08-Dell-C810-sch-img. We save the date of the image, the make and model of the laptop and the type of image saved. The school image would not contain Office 2003 or an anti-virus program for instance.

- In the future we would simply restore the image from the external drive. If there are updates needed to the image, we would update the laptop and then store the new image on the external drive.
Other methods of loading software

- If you use other imaging software such as Ghost or Acronis, be aware that you will need to pay a license fee on each computer imaged. Ghost and Acronis allow you to image a larger drive to a smaller drive while Clonezilla does not. You can use a free program called GParted to adjust the partition size of the drive to a smaller size. Download GParted from http://sourceforge.net/projects/gparted/. You can use the image to load other computers.

- Another method of loading laptops is by using Sysprep as discussed in the Software loading deck. Multicasting using Clonezilla Server is also discussed.

- You can purchase an inexpensive adapter so that you can transfer images from IDE drives to 21/2 inch laptop drives.

- While it may take time to learn cloning techniques it will save a huge amount of time in the future. The master disk can be updated once a month. Microsoft updates Windows and Office products typically the 2nd Tuesday of the month. They occasionally update in between if a critical issue needs to be addressed.
Batteries

Press the white button on the left and the battery will show the remaining charge.

- Test the batteries to see if they can be charged and if they can hold a charge. If the power adapter you are using is not the correct voltage, it may be enough to power the laptop but not charge the batteries.
- There is a market for all working laptops – even without batteries as people want the mobility even though it needs to be plugged into power.
- Batteries can be purchased if you have a shortage of working batteries and can get a higher price with the battery.
Parting out laptops

- Laptops are more fragile than desktop units. The parts can be valuable so you can refurbish units that need them or find a market for the parts.
- Some problems with laptops are caused by the hinges breaking where the screen connects to the base unit. Other problems occur when the power cord is tripped over and the power input connection needs to be re-soldered. When laptops are dropped, the screen is often damaged. At times the picture is distorted because the connecting cable inside the unit is damaged or has become loose.
- Parts that are easily harvested include the Ram, CD drive, DVD drive, any PC Cards, the slot covers for the PC cards, covers for the memory compartments, the dummy drives that cover the drive slots when they are removed, wireless mini PCI Express cards and hard drives and caddies. Keep all screws as you may need them in the future. You will also want to keep some docking stations, external keypads, etc.
- There is a market for good screens without scratches or burned-in images. Even though the laptop doesn’t work, the screen can be valuable.
Environmental and safety concerns

- Laptops should not be thrown in the landfill. The screen contain some mercury as does the backlight. It should be handled like fluorescent lights. If the screen is cracked, handle with gloves so that your skin isn’t pierced with the glass contain mercury.

- The batteries contained in laptops are also toxic. The onboard battery is often difficult to remove. With some models it is necessary to remove over 20 screws to get to it! The laptop does have a motherboard that can be added to the rest of your circuit boards. There is not much value in scrapping out laptops as the time it takes to part them out generates labor costs in excess of the scrap value.
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