Help Desk training

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1. Generals notes on computer services provided by Help Deskand other useful information

* The Help Desk staff is on the front-line in the war against viruses for the students and for PSU wireless connectivity and is the starting point for students who need assistance with their computers.
* The goal of this document is to ensure the Help Desk staff is using both a consistent approach and to provide proven procedures when servicing student computers within set time limits.
* The Help Desk staff may work on customer computers up to approximately 30 minutes. If after 30 minutes, the problem is not corrected, it would be best for the customer that they be directed to the Computer Repair Center in Highland Hall as the Repair Center staff has more experience, equipment, software media and registered antispyware / malware utilities.

Exception: If after 30 minutes, you are close to completing the service to the customer’s computer, contact a Help Desk supervisor for approval to continue but your total time is limited to 45 minutes.

* The Help Desk staff and the Computer Repair Center staff will work together to share knowledge and procedures for the servicing of student computers. A team approach will ensure students are getting the best service possible. We will share each other’s knowledge in order to best serve the campus community.

Contents of this document are extracted from the Repair Center ‘Shop Worker’s Guide’ and other shop documents for use by the Help Desk. If desired, refer to <http://oz.plymouth.edu/~tom/shop_employees/shop_worker_guide.html> for additional troubleshooting information.

* The Computer Repair Center’s labor rates have all been lowered, especially for Apple and Dell computers. The students most affected by the decrease in labor rates are those who own Apple or Dell computers. All of the Computer Center labor rates and policies can be viewed at <http://www.plymouth.edu/infotech/computer/repair.html> .
* When the Help Desk Staff refer a student to the Computer Repair Center, there are two options on how the computer gets to the Repair Center:
  + The student can bring their computer to the Repair center themselves, where they will create a work order.
    - AC Adapters for laptops other than most Dell laptops are always required at the Repair Center.
      * The Repair Center has common Dell model AC Adapters, but not all of them. If the Repair Center does not have the model adapter required for a Dell laptop, the customer will be asked to provide it.
      * The Repair Center has AC Adapters for Apple MacBook and MacBook Pro notebooks but if the customer is experiencing power issues or battery issues, then the Repair Center should obtain the laptop’s AC adapter from the customer in order to test it.
  + A work order is created at the help desk using the Repair Center’s Work Order system and the work order is taped to the computer, and Help Desk staff will deliver the computers to the Repair Center at intervals throughout the day. The work order created by the Help Desk staff will include any steps already taken by the Help Desk in the service to the computer.

Due to liability: The Help Desk staff is prohibited from the following services to computers:

* Operating system repair
* Operating system installation
* Disassembly of a student computer in any manner

1. General note on viruses -

Even with an up to date antivirus program, viruses, especially malware that we have seen the past 2-3 years, can infect even the most careful user’s computer. The authors of viruses and malware are smart, although devious and misdirected, and make an innocent-looking prompt activate the installation of the invasive program.

* The common malware infections that the Help Desk and Computer Repair Center staff has seen on customer’s computers are:
* Antivirus 2010, Antivirus Pro 2010 Antispyware 2010, VISTA Antispyware 2010, etc……. A more complete list is here: <http://en.wikipedia.org/wiki/Rogue_security_software>
* Without making it sound as if it is not a serious problem, a simple virus is easy to remove with our tested utilities and consistent procedures that the Help Desk and Repair Center use.
  + In a more serious infestation, once a rogue program is on a computer, it can open the door to other viruses and in a short period of time can make the computer essentially unusable.
    - A rogue program is harder to remove and can disable Internet Explorer, Firefox, Windows Explorer, network access, the firewall and other crucial parts of an operating system.
    - While we continue to learn new procedures every year as tougher rogue programs are released, the basic methods we use are the same. Help Desk staff and Repair Center staff perform considerable research each year as we learn new techniques.
    - A common problem is when students lose their network access due to a virus or malware changing the internet options settings by setting up a proxy server. The option for proxy server should NOT be selected in internet options.
      * At the Internet Options window, select the Connections tab, then click on LAN settings.
        + The “automatically detect settings” should be selected and Proxy server should NOT be selected.
* While both the Help Desk and Computer Repair Center use several freely available utilities to service virus / malware infections, the Repair Center also has several licensed utilities that are used to remove viruses and malware. The registered utilities are stronger and more successful, in many cases, than the free utilities.

1. Software utilities recommended for Help Desk Staff -

* Ultimate Boot CD – A bootable Windows environment with many uses.
  + From this CD we commonly:
    - Test network card for functionality by bypassing windows.
    - Run HD Tune – for diagnosing the HD
    - Remove temporary files, restore points, all .log files on customer HD
    - Run Superantispyware on customer HD
    - Run defrag on customer HD
    - Run scandisk on customer HD
    - Run a memory tester on the computer’s RAM with Memtest, located at the first menu of the Hiren USB key or UBCD. The Hiren USB key and UBCD is discussed later on. Memtest also can be downloaded in an iso format. <http://www.memtest86.com/>
* Malawarebytes – a free yet proven successful utility for virus/malware removal
* Superantispyware - a free yet proven successful utility for virus/malware removal
* HD Tune (available on Hiren USB key and UBCD or as a stand-alone download) – used to evaluate hard drive for bad sectors. If even one bad sector on customer’s hard drive is found, it is a clear sign that the hard drive is starting to fail. A reformat of the hard drive may temporary fix the bad sector, but experience shows that the problem will reoccur. Data backup should be a high priority for the customer.
* Notes:
  + The Repair Center staff use several additional utilities, both free and subscription-based utilities. We recommend the above mentioned utilities for the Help Desk as part of their service to the customer.
  + If the Help Desk uses utilities that they use that are consistently successful, the Repair Center staff would appreciate knowledge of such utilities.

1. Commonly used utilities within Windows operating systems -

* Defrag -
  + The steps may differ slightly on how to start defrag from windows based on the OS version you have on the computer.
  + Basically, right-click on C: drive, go to properties
    - Select Tools Tab
      * Select ‘Defragment Now’
* Scandisk -
  + The steps may differ slightly on how to start defrag from windows based on the OS version you have on the computer.
  + Basically, right-click on C: drive, go to properties
    - Select Tools Tab
      * Select ‘Check Now’ in the error-checking section
* Ipconfig with associated options –
  + The command "ipconfig /?" displays the set of available options.
  + Is a command line utility available on all versions of Microsoft Windows starting with Windows NT. ipconfig is designed to be run from the Windows command prompt. This utility allows you to get the IP address information of a Windows computer. It also allows some control over active [TCP/IP](http://compnetworking.about.com/cs/basictcpip/g/bldef_tcpip.htm) connections. Ipconfig is an alternative to the older 'winipcfg' utility.
  + To get to the Command Prompt, at the RUN prompt type ‘cmd’ and press ‘OK’. To get to the RUN prompt, press the windows-R key combination.

Notes:

* Running Defrag and Scandisk from the Hiren USB key or UBCD is faster than if run from the customer’s operating system.
* I would not recommend running defrag until after you remove the temporary files as shown in the Hiren USB key or UBCD cleanup form or the XP/VISTA/Win7 cleanup forms.

1. Forms and Documents **–**

The intended use of these forms is to provide a consistent approach to the servicing of customers’ computers. Use them, share them, or email me . [ [tom@plymouth.edu](mailto:tom@plymouth.edu) ] suggestions for improving them I learn a great deal from student staff. Share your knowledge.

Recommendation:

* For hard drive cleanup, I currently use the Hiren USB key or UBCD cleanup form the most often. Boot off the Hiren USB key or UBCD to benefit the most from it.
* If booted off the customer’s hard drive, use section A of the XP, Vista or Win 7 cleanup form to delete temporary files. Remember, viruses can be in the temp files and restore points therefore it is always a good idea to delete them.
* **Xp cleanup - Use when booted from the customer’s hard drive.** A step by step form used when removing temp files and viruses from a customer’s hard drive. Section A is for removing temp files. Not all steps in section B and C of this form need to be run.
* **Vista Cleanup - Use when booted from the customer’s hard drive.** A step by step form used when removing temp files and viruses from a customer’s hard drive. Section A is for removing temp files. Not all steps in section B and C of this form need to be run.
* **Windows 7 Cleanup - Use when booted from the customer’s hard drive.** A step by step form used when removing temp files and viruses from a customer’s hard drive. Section A is for removing temp files. Not all steps in section B and C of this form need to be run by Help Desk staff.
* **Triage cleanup form**– a step by step form used to removed temp files and old restore points. This is an alternative form to the XP, Vista, and Win7 cleanup form. This method allows for removal of files that cannot be removed when booted off the computer’s hard drive.
  + Defrag and scandisk can also be run from the Hiren USB key or UBCD.
  + HD Tune, which checks for bad sectors, can also be run from the Hiren USB key or UBCD.
* **How to remove the McAfee ePo Agent/ MCafee agent** – for the students who still have the PSU version of McAfee antivirus, these instructions work 99.999% of the time. Uninstall as many McAfee programs through Control Add/Remove before following the directions on this form.
* **PSU wireless configuration process and troubleshooting -** This is a document created by Tom Morin that has been a great help in the troubleshooting PSU wireless and connectivity issues.
* **169 IP address and "limited or no connectivity** - Are you getting an IP that starts with 169 on your wired or wireless network card?

1. Common causes to common problems -

This is not intended to be a complete list of possible causes.

1. ResNet configuration issues

* No Bradford agent installed
* The IP starts with 169 and/or a limited or no connectivity” message
* PSU Guest wireless is OK but PSU wireless does not work
* No antivirus package is installed
* The antivirus is not active or updated
* Customer has multiple antivirus packages installed.
* OS requires service pack installation
* Student’s network access is restricted due to spamming
* A Proxy server setting was changed. See page 4 for steps to verify and correct.

1. BSOD

* Failing hard drive
* Failing RAM
* Corrupt OS install
* Driver issue (a wrong or old graphics driver is a common cause)
* Corrupt or incompatible application
* Virus infestation

1. Slow computer

* Failing hard drive
* Not enough RAM ( too many applications running)
* Multiple antivirus programs installed
* Antivirus is known to slow down computer, especially if multiple AV products are installed
* Not enough room on hard drive - Clean up disk (empty trash, clean up temp files etc.)
* hard drive is severely fragmented – Defragment the drive using the Windows Defrag tool
* If PSU’s MCAfee Enterprise anti-virus application and EPO agent are installed, it should be removed and Bradford and Avira antivirus should be installed. This version McAfee is known to slow down computers. Clear instructions are provided in a document provided along with this handout.

1. Virus infestation

Viruses get onto computers in dozens of different ways. On campus the common known methods are:

* imbedded in pirated music and movies
* opening email attachments ( especially \*.exe files)
* Inserting a previously infected USB key into a USB port
* No antivirus scanner
* Antivirus scanner is not updated
* Antivirus is disabled
* Firewall turned off
* Downloading infected software
* accepting without reading
  + examples:

1. While browsing the Internet, an internet advertisement or window appears that says the computer is infected and/or that a unique plug-in is required. Without fully understanding what it is the person is getting, they accept the prompt.
2. When installing or updating a program, a customer is prompted (often there is a checkbox already checked) if it's ok to install additional programs that they may not want or are designed to monitor their usage of the program.
3. Application or file not opening

* The specific file is damaged.
* The specific file is not in the location in the customer thinks it is.
* The application that created the document is damaged.
* The application that created the document is no longer installed.
* A virus is preventing the application from opening.

1. Diagnosing / troubleshooting process for identified common issues and causes

SIX BASIC STEPS IN TROUBLESHOOTING

1. Identify the problem (gather information from the customer to identify the nature of the problem).
   1. Can customer show you the problem?
   2. How often does the problem occur?
   3. Has any new hardware or software been installed recently?
   4. Does the problem occur in a specific application?
2. Isolate the problem
3. Correct the problem
4. Verify corrective action taken
5. Document your steps. This is useful for two reasons. For you or others to refer back to  on the next possible service call for the same equipment  and because you may not be the only one servicing the computer and the next person will need to know what steps you have taken.
6. Follow-up - contact the customer after they take back the equipment and see if they are problem-free. This is good customer service and shows the customer that you are concerned about their problem.

Notes:

Some problems are hard to duplicate, especially intermittent hardware or intermittent software problems.  Refer to customer's information on exactly what error message or problem occurred, what applications was the customer using, how many applications were open, etc.....  Sometimes the computer works fine in the shop, but when the customer takes it back, the problem returns.  This is always frustrating to the customer, and technician. Could an externally connected peripheral that the customer has have caused the problem? Communicate with the customer as often as needed.

Ensure that you addressed the initial problem described by the customer. It is possible that the original problem is overlooked when an additional problem or problems are encountered during the evaluation.

In a typical scenario, the customer does not always remember the conditions when the problem first happened. If you cannot duplicate the problem, or are not sure you fixed it, ask the customer that if the problem happens again, to immediately write down the conditions that existed when the problem occurs. This should help the technician in their continued diagnosis.

* **ResNEt Configuration issues – possible causes of:**
  + No Bradford utility installed -
    - If currently required, install the Bradford utility. If you are not sure if it is required in the Fall 2010 semester, ask a Help Desk Supervisor or the Help Desk Manager
  + The IP starts with 169 and/or a limited or no connectivity” message
    - Bad Network card
    - Bad driver for the network card
    - Bad network cable
    - No wireless signal
    - Virus/Malware infestation
    - Restricted access due to spamming
* PSU Guest wireless is OK but PSU wireless does not work
  + - This typically indicates that you have a Bradford issue.
      * Know how to restart Bradford services
  + No antivirus program is installed
    - Install Avira or other free antivirus – Exception – Customer may have a pre-paid subscription to an antivirus program that needs to be installed. Communicate with the customer to determine this.
  + Antivirus is not active or updated -
    - Take appropriate action – if the antivirus program is expired, communicate with customer and recommend installing the free Avira antivirus (remove the expired program first).
  + Customer has multiple antivirus programs installed -
    - Having more than one antivirus program is counter-productive and will also slow a computer down
    - Communicate with customer to see which antivirus program they want to keep. \*\*One of the antivirus programs may be a subscription-based program.
    - Remove the unneeded antivirus program
    - Update the antivirus program that is being kept.
  + OS requires service pack installation -
    - Take appropriate action.
  + Student’ network access is restricted due to spamming -
    - Check with a Help Desk supervisor to determine if this is the case. The Help Desk Supervisor will need to take appropriate action AFTER viruses / malware is successfully removed.
  + Networking produced a document in Fall 2010. Help Desk senior staff should have access to it. The Repair Center staff are adding to this document and will publish it in late March 1011. We will provide a link to it here at that time.
* **Blue screen - commonly known as the Blue Screen of Death. (BSOD) –**
* **Define – A term** used for the error displayed by some operating systems, most notably Microsoft Windows, after encountering a critical system error that can cause the system to shut down to prevent irreversible damage to its integrity. It serves to present information for diagnostic purposes that was collected as the operating system issued a bug check
* **Reference**: Refer to here for more information**:** <http://en.wikipedia.org/wiki/Blue_Screen_of_Death>.
* **causes of:**
  + Failing hard drive -
    - If the computer has hard drive diagnostics on it, run the tests.
      * Dell, some HP/Compaq, some Toshiba have built-in tests.
    - Boot off the UBCD and run HD tune. If ANY bad sectors are found, the hard drive is failing and should be replaced. \*\* reformatting the HD may temporary fix the bad sector, but the HD will eventually completely fail.
    - If bad sectors are found, encourage the customer to back up important files ASAP and replace the HD or refer the customer to the Repair Center.
    - Troubleshooting hard drives - If you have the time and interest. <http://oz.plymouth.edu/~tom/Troubleshooting/diagnosingharddrives.html>
  + Failing RAM -
    - If a Dell, run the built in diagnostics to test the RAM.
    - Run a third-party memory tester. There is one on the UBCD called Memtest86.
  + Corrupt OS install -
    - If indications are that the OS installation is corrupt, refer to the Repair Center.
  + Driver issue (a wrong or old graphics driver is a common cause of BSOD) -
    - If customer states that since they updated a driver, the video is bad, start in safe mode and delete the graphics driver.
    - Restart computer, at ‘splash screen’ press F8 and start with ‘last known good configuration’.
  + Corrupt or incompatible application -
    - What was the last application the customer installed or changed?
  + Outdated BIOS – scenario – if Windows updated a device driver but the system’s BIOS is really outdated, this could cause a problem –
    - **As a general rule, only perform BIOS updates to Dell systems.**
  + Virus infestation – refer to virus section -
  + Refer to the Computer Repair Center for service if needed -
* **Slow computer – possible causes and solutions:**
  + Failing hard drive -
    - If the computer has hard drive diagnostics on it, run the tests.
    - Boot off the UBCD and run HD tune. If ANY bad sectors are found, the hard drive is failing and should be replaced. \*\* FYI: reformatting the HD may temporary fix the bad sector, but the HD will eventually completely fail.
      * If bad sectors are found, encourage the customer to back up important files ASAP and replace the HD or refer the customer to the Repair Center.
  + Not enough memory (RAM) (too many applications running) -
    - If a lot of applications are running, close out as many as you can and see if the customer notices an increase in speed.
    - RAM is typically quite affordable. Refer the customer to the Repair Center for RAM recommendations and pricing.
  + Multiple antivirus programs installed -
    - Having two or more antivirus programs will cause conflicts and slow down the computer. Let customer know this and recommend they decide which one they want to keep. I recommend letting the customer decide’ which one to keep as one may be a paid subscription antivirus program.
  + McAfee Antivirus (The PSU version) is known to slow down computers -
    - If a student’s personal laptop has the PSU version McAfee antivirus on it, it should be removed and Avira should be installed.
    - MCafee removal through Add/Remove programs is not always successful and the EPO agent can be difficult to remove. Follow the instructions provided for McAfee / EPO removal.
  + Not enough room on hard drive -
    - Remove the temp files and old restore points using the Triage cleanup form - ( formerly known as UBCD cleanup form) or the appropriate XP/Vista/Win7 cleanup form. See if this freed up enough room.
    - Large hard drives are inexpensive. Example: a 320GB hard drive for a laptop costs approximately $ 60.00 - $ 70.00. Refer customer to Repair Center. The Repair Center can order the new HD and likely clone the old HD to the new one.
  + Hard drive is severely fragmented -
    - After removing temporary files, show the customer how to initiate defrag through Windows**. This can take considerable time therefore do not perform this at the Help Desk.**
    - Refer the customer to the Repair Center if the customer prefers that we perform the defrag and general hard drive cleanup. There is no charge.
    - A defrag and scandisk will run faster when booted off the UBCD.
* **Virus – possible causes of:**

When a customer brings their computer to the help desk because they either know they have a virus or they think they have a virus, the Repair Center recommends that the Help Desk service the computer in the following manner:

1. First off, it is a waste of time to run virus removal procedures on a computer that is loaded with temp files and old restore points that are likely infected.

***Here is an example of a virus infected laptop se serviced that was also running slow****:   During the Spring 2010 semester we serviced a computer that was infected with malware.  The old restore points were 84.2GB in size and the temp files were 7.3GB in size.  Running antivirus utilities on these files would have wasted considerable time.  As a test, I started an antivirus run on the restore points and there were viruses in them. Removing these restore points and temp files beforehand saved me time later on in the process of virus removal. We subsequently successfully removed the infection, defrag’d the hard drive and it ran noticeably faster.*

*This may be an extreme case with the massive size of the restore points but in the Computer Repair Center, the restore points probably average 15 – 30GB in size. The temp files on a computer average between 3 – 8GB in size. If you were to multiply the time it takes to run multiple utilities on these unnecessary files by the number of systems evaluated weekly, the time wasted would be considerable.*

* The Repair Center staff is instructed to first remove all the temp files and all restore points, as they are likely infected. I recommend using the either the Triage cleanup form - ( formerly known as UBCD cleanup form) or the XP, Vista, or Win 7 cleanup form.
  + *It is easier to remove restore points and temporary files when booted off an* Hiren USB key or UBCD  *than it is to do so within windows as file restrictions cause problems when clearing out temp files.*
  + It is a rare case when we fix a problem with someone’s computer infected with viruses by using the system restore feature because the virus has been in the computer for quite some time before the customer realizes it and some virus / malware intentionally goes after the restore points to prevent a simple fix.. It is more likely that the restore points are infected therefore I remove them all, as well as the temporary files.

1. Use the cleanup forms I created for XP, Vista, or Win 7, or the Triage cleanup form - ( formerly known as UBCD cleanup form) to clean out the temp files.

* Following the appropriate form will get rid of possibly several gigabytes of junk before starting the antivirus utilities. This saves time on your part.
* The forms list several utilities. They are sued in the Repair Center for a thorough service to the customers’ computers. Not all utilities need to be run by the Help Desk staff. Experience will let you know which utilities to run based on the type problem. The two utilities that seem to work well on viruses are Superantispyware and Malawarebytes.
* Stinger is a stand-alone program that can be run. It allows you to browse to specific drives or folders for scanning.
* If the infestation is severe and you are unable to proceed when booted normally, try restarting the laptop in safe mode with Network Support. Run your utilities in safe mode.
  + If you can successfully run the utilities in safe mode, and remove several infections, restart in normal mode and rerun the same utilities.
* If you are still unable to run your utilities in safe mode, and/or Windows explorer is disabled from the virus, re-boot off an Hiren USB key or UBCD and manually remove the temp files, old restore points, c:\pagefile.sys) using the Triage cleanup form - ( formerly known as UBCD cleanup form).

If the infestation is too severe, or the infestation has damaged Window files, refer the customer to the Repair Center.

* **Application or file not opening – possible causes of:**
  + The specific file is damaged -
    - Example: If a Word file will not open, try opening another word file or try creating a new word file and saving it and then opening the file you just created.
  + The specific file is not in the location in the customer thinks it is -
    - If the customer knows the filename of the file, search the customer’s hard drive for the file.
  + The application that created the document is damaged
    - If a customer’s issue is that that no Microsoft Office document is opening, verify that Microsoft Office is installed. If it is installed the installation might be damaged.
      * Ask if the customer has their Microsoft Office media for reinstallation.
  + The application that created the document is no longer installed -
    - A common situation is that when a computer is re-imaged, the word processing suite may not be reinstalled. Some individuals do not realize that Microsoft Office is a separate product from Windows operating systems.
  + A virus is preventing the application from opening -
    - Perform normal virus checks.

**Final thoughts** –

* Be consistent.
* Be thorough.
* Research error messages on-line.
* Document your work
* Ask for help when needed. Help Desk shift Supervisors have considerable experience and the Repair Center staff is always available for any help we can provide.
  + If any of the procedures are new to you, ask for help.
  + The Repair Center staff will also make themselves available to work with you on any of these procedures.
* Only Senior Help Desk staff may refer the customer to the Repair Center.

End –