Sanitizing Computers and Digital Devices

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www.passitoncenter.org
Agenda

- Introduction – Carolyn Phillips and Liz Persaud
- Policies and Procedures - Jessica Brodey
- Vocabulary and Work area, tools, supplies
- Sanitizing a computer and peripherals
- Sanitizing the hard drive/data
- Sanitizing phones & PDAs
- Introduction to the National Cristina Foundation
How safe is that computer?

- A 2004 study conducted by the University of Arizona found that keyboards and mice harbor 400 times as many microbes as toilet seats.

- In early 2008, the Centers for Disease Control reported that a 2007 flu outbreak in a U.S. elementary school was the result of shared keyboards.
What about the Data?

- In 2003 two MIT students purchased 158 used disk drives from various locations and found more than 5,000 credit card numbers, medical reports, detailed personal and corporate financial information, and several gigabytes worth of personal e-mail on those drives.
Introduction

- Sanitization is a form of cleaning that removes potentially harmful substances and makes it safe to use the object.

- Sanitizing computers, peripherals and other digital devices requires extra care.
Introduction

- Data Wiping & Drive Sanitization is critical.

- Computer refurbishing programs need to develop safe practices for sanitization.
Learning Objectives:

The participant should learn how to:

- Identify policies and procedures needed for program activities
- Describe appropriate work areas
- Explain essential safety measures
- Select appropriate tools and supplies
- Document and demonstrate procedures to sanitize computers and components
Policies and Procedures

- Policies and Procedures are needed to ensure that everyone understands what must be done and how to do it.
- Policies and Procedures create a standard to assess compliance.
- When you have P&P, there is an assumption in your favor that you comply with stated practices.
What are Policies and Procedures?

- **Policy** is a “big picture” statement of goals
  - All computers and digital devices must be sanitized prior to distribution.

- **Sanitization policy** should include:
  - What should be sanitized
  - When
  - Where
  - Who
  - How (refer to procedures)
What are Policies and Procedures? (cont.’)

- Procedures are the “nuts and bolts” – the step-by-step instructions specifying HOW to accomplish the policy.
Example: P&P Table of Contents

Chapter 1: Organizational Structure
  *

Chapter 5: Program Operations
  5.1 Facilities
  5.2 Acquisitions/Donations
  5.3 Inventory Management
  5.4 Evaluation
  5.5 Repairing/Refurbishing
  ⇒ 5.6 Sanitization
Sample Sanitization Policy

(May insert Purpose first)

5.6.A. All computers and digital devices received by PROGRAM shall be sanitized immediately upon receipt and prior to storage in PROGRAM facilities.

5.6.B. All computers and digital devices shall be sanitized in the sanitization room.

5.6.C. Only staff members that have been trained in sanitization may sanitize equipment.

5.6.D. Sanitized equipment shall be stored in plastic bags to prevent contamination.

5.6.E. All equipment that has been in storage longer than three months shall be sanitized again before distribution to a consumer.
5.6.F. Sanitization of computers and digital devices shall be done in accordance with PROCEDURE A:

1. ADVANCE PREPARATION: Prepare a work area (wood or tile floor) and stock the supplies that will be needed. The following will be helpful in cleaning computers and computer devices.
   - Anti-bacterial wipes
   - Anti-static cloths
   - Anti-static wristband or other professional grounding device
   - Cotton swabs
Sanitization Procedure Should Address:

- Purpose
- Indication/Frequency
- Advance Preparation
- Work Area
- Tools/Supplies
- Steps
Sanitization Procedures

- Separate procedures for different categories/types of devices
- Separate procedure for data wiping
Sanitization Vocabulary

- **Cleaning** ranges from physical removal of contaminants to sterilization.
- **Sanitizing** is a form of cleaning that removes most harmful substances.
- **Detergents** are chemicals that help remove dirt and oil.
- **Disinfectants** are chemicals that remove and destroy harmful microorganisms.
FDA: Sanitizers are

“chemical or physical agents that reduce microorganism contamination levels present on inanimate environmental surfaces”
CDC: “Disinfection means the use of a chemical procedure that eliminates virtually all recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial endospores) on inanimate objects.”
Work Area for Sanitizing Computers

- What special characteristics must the work area have?
- What services are required?
- What tools are needed?
- What kinds of supplies are appropriate?
Work Area: Characteristics

- Separate sanitization area
- Floor: no carpet; should be wood, tile or concrete
- Ergonomic tables or counter (height)
- Secure storage for chemicals
Worker safety

- Appropriate training in handling electrical devices and using chemicals
- Safe work area
- Appropriate personal safety precautions
Services to work area

- Access to power outlets, properly grounded
- Ease of access to water
- Good task lighting for work area
Tools and protective devices

- Anti-static wristband
- Face mask
- Small, soft brushes
## Supplies

- Anti-bacterial wipes
- Anti-static cloths
- Cotton swabs
- Disposable gloves
- Lint-free cleaning cloths
- Microfiber cleaning cloths
- Bleach
- Compressed air
- Glass cleaner
- Alcohol or alcohol wipes
Case Cleaning:

This is where the dust goes at night to cuddle up with your processor. Dust is not your friend, it is not something to be laughed at, and it deserves respect. This is war ladies and gentlemen! Load up with some compressed air because you’re heading off to the frontlines! Actually, cleaning a computer case isn't that difficult. In fact, the entire process won't take more than about 20 or 25 minutes if the dust is really bad.
How to Clean a Computer

- Turn off your computer.
- Remove the side cover of the computer case, exposing the motherboard and other hardware components.
- Inspect all cables and connections. Be sure to look for cables that are frayed, loose, pinched, snug or otherwise damaged. If you come across any cables that are damaged in any way or form you should immediately replace them. If a cable is frayed do not attempt to patch it up with electrical tape, this is very dangerous fix. We also advise that you replace snug cables with longer ones before it accidentally snaps.
Now its time to get out the compressed air. Shoot the canned air at everything in your computer. Pay special attention to the heatsink and fan on top of your processor. This area collects a lot of dust. Some other areas to focus on are add-on cards (audio/video/modem), case fans, hard disks, power supply and removable media drives (cd-rom). A vacuum may help suck out the dust while you knock it loose with the compressed air.

Caution: Follow the directions on the back of compressed air! Do not spray hardware at close range! If you choose to use a vacuum, do not attempt to vacuum anything in your computer!!!
How to Clean a Computer

- If you notice dust in the PCI and AGP slots of your motherboard it may be wise to remove each add-on card and shoot some compressed air into the slots to break away the dust.

- If your case has an air filter remove it and run it through warm water to remove the dust. To dry it simply use a cloth (lint-free if possible) and gently dab away the excess water. Place the filter back into the case.

- Replace the side cover of the computer, but check first that there aren't any cables that are lying next to any fans. Fasten the cover and restore the power.
How to Clean a Keyboard

- Computer Keyboards can get dirty very easily, to clean the surface of a keyboard is very straightforward.

What you will need:
- lint free cloth.
- dry cloth or duster.
- suitable cleaning fluid (isopropyl alcohol).
- cotton buds.
- Can of compressed air or vacuum cleaner.
- Flat tip screwdriver (optional for thorough clean).
How to Clean a Keyboard

- First, shutdown your PC and remove the mains plug, unplug the keyboard (remember which socket) and hold it upside down to release any debris from in between the keys (pressing the keys is a good way to release it).

If you have a can of compressed air then use it to blow any debris from around and under the keys, if not then use the hose of a vacuum cleaner to remove it.

- Helpwithpcs.com
How to Clean a Keyboard

- Now take one of the cotton buds and put a couple of drops of the cleaning fluid on it, use the cotton bud to clean the sides of the keys as seen in fig 1.1.

- Helpwithpcs.com
How to Clean a Keyboard

- After cleaning the sides of the keys take your lint free cloth and dampen it with your cleaning fluid (don't put the liquid directly on the keyboard), give the surface of the keyboard a good wipe over using the cloth to trace the contours of the keys (see fig 1.2).

When you have finished give the keyboard a wipe over with the dry cloth/duster, you should now have a nice clean keyboard, to clean it more thoroughly follow the guide below.

- Helpwithpcs.com
How to Clean a Mouse

- Everybody at some point when using a PC will need to clean the mouse, this will take you through cleaning a mouse step by step.

When your mouse needs cleaning you will notice it sticking while you are using it, to clean a mouse is fairly straightforward and only takes 10 minutes.

- Helpwithpcs.com
How to Clean a Mouse

- First unplug your mouse from the PC and get to hand a soft tissue and suitable cleaning fluid (window cleaner is fine)

- Notice the removable cover on the bottom of the mouse.

- Turn the mouse cover anti-clockwise to release the ball, remove the cover and take the ball out.

- Helpwithpcs.com
How to Clean a Mouse

- Turn the mouse cover anti-clockwise to release the ball, remove the cover and take the ball out.

- Use the soft tissue to clean the mouse ball, be sure to remove all dust/hair/debris.

- Next, notice the 3 rollers within the mouse casing, these are what we need to clean.

- Helpwithpcs.com
How to Clean a Mouse

- You can improvise on how to clean the rollers, using your fingernail gets good results, if the mouse hasn't been cleaned before then you will see lots of dust on the rollers, whichever way you choose to clean them make sure you remove all traces of dust/debris as the smallest piece can cause the mouse to behave erratically.

  When you have removed all traces of dust/dirt from the rollers and the ball is nice and clean, simply put the ball back in and replace the cover turning clockwise to lock it in place.

  Now your mouse should be as good as new.

- Helpwithpcs.com
How to Clean Monitors

- LCD
  http://www.ehow.com/video_2200466_clean-monitor.html
- CRT
  Show supplies needed
  Explain procedure
  Video clip
Considering Data Sanitization

You need to ensure that you don't give away more than you planned. The last thing you want is to pass on a PC when sensitive business information, or even personal information such as stored passwords, personal documents and credit card numbers that could be retrieved.
A Look at Data Wiping Policies

“Computer Recycling Group, LLC (CRG) has formalized its long-standing approach to the “total” erasure of all internal and external data on these devices: Partitions Memory cards (compact flash, MMC, memory sticks, smart media, IBM Micro-drives, etc.) USB drives Diskettes Hard drives (all platforms & operating systems from current through legacy) Zip ® Jaz ® Click ® disks Solid state media (digital flash, MP3 & camera cards”

www.comprecgroup.com
A Look at Data Wiping Policies

“NOTE: These services are “optional”, and very affordable, especially in volume quantities. Most importantly, the CRG Data Wiping & Drive Sanitation (DWDS) critical services limit your responsibility and liability, when documented and performed by an outside party.”

www.comprecgroup.com
“Deleting files from the computer does not remove the data. Data that has been "deleted" without utilizing the methods listed below can simply be "undeleted." **CRG** recommends that computers (desktop, laptop, notebook and servers) players, cameras and media storage devices **must** have their drives sanitized (data overwritten) with software that completes a three-pass binary wipe.”

www.comprecgroup.com
“A protocol that uses a three-pass, or more, binary wipe writes zeros and ones in a pseudo random pattern over existing data. This procedure should be completed as part of the CRG recycling process or by an appropriate designated party within your organization prior to removing the equipment from the existing environment.”

www.comprecgroup.com
A Look at Data Wiping Policies

Is your organization compliant with the new government Data Privacy Acts?

- New regulations require you to have a customer privacy policy in place.
- Your policy must include secure document retirement in order to be compliant with recent acts.
A Look at Data Wiping Policies

Is your organization compliant with the new government Data Privacy Acts?

- HIPAA,
- Gramm-Leach-Bliley Act,
- Sarbanes-Oxley Act,
- The Patriot Act,
- Identity Theft and Assumption Deterrence Act
Methods for Ensuring Data Protection

- You can physically smash the drive...

- However, there are alternatives that enable you to keep the system intact so you can have a complete system!
Erasing – is it enough?

You can spend hours going through your hard drive and deleting all the files and documents you want, but using the delete key on your keyboard in Windows basically only removes the shortcuts to the files making them invisible to users.
Erasing – is it enough?

- Deleted files still reside on the hard drive.
- A quick Google search shows many options for system recovery software that allows anyone to reinstate data.

Erasing is just not secure enough!
Formatting – is it enough?

- Formatting means - to prepare a storage medium, usually a disk, for reading and writing.

- When you format a disk, the **operating system** erases all bookkeeping information on the disk, tests the disk to make sure all sectors are reliable, marks bad sectors (those that are scratched), and creates internal **address** tables that it later uses to locate information.

- You must format a disk before you can use it.
Formatting – is it enough?

- Formatting the hard drive is a bit more secure than simply erasing the files.

- Formatting a disk does not erase the data on the disk, only the address tables. It makes it much more difficult to recover the files.

- However a computer specialist would be able to recover most or all the data that was on the disk before the reformat.
If you have decided a disk format is a good choice, at the very least to do a full format rather than a quick format.
Wiping is more Secure!

- More secure than reformatting is a process called disk wiping.

- The term disk wiping is not only used in reference to hard drives but any storage device such as CDs, RAIDs, thumb drives and others.
Wiping is more Secure!

Disk wiping is a secure method of ensuring that data, including company and individually licensed software on your computer and storage devices is irrecoverably deleted before recycling or donating the equipment.
Algorithms differ from product to product.

They all generally write the entire disk with a number (zero or one), then a reformat is needed.
Considering Disk Wiping Software

- The more times the disk is overwritten and formatted the more secure the disk wipe is, but the trade-off is the extra time to perform additional rewrites.
The government standard (DoD 5220.22-M), considered a medium security level, specifies three iterations to completely overwrite a hard drive six times.
Each iteration makes two write-passes over the entire drive; the first pass inscribes ones (1) over the drive surface and the second inscribes zeros (0) onto the surface.
After the third iteration, a government designated code of 246 is written across the drive, then it is verified by a final pass that uses a read-verify process.
There are a variety of products available for different operating systems that you can purchase, or freely downloaded online to perform more secure disk wipes.
Eraser
Eraser is an advanced security tool (for Windows), which allows you to completely remove sensitive data from your hard drive by overwriting it several times with carefully selected patterns.

- Works with Windows 95, 98, ME, NT, 2000, XP, Windows 2003 Server and DOS.
- Eraser is Free software and its source code is released under GNU General Public License.
**DBAN - Darik's Boot and Nuke**
Darik's Boot and Nuke ("DBAN") is a self-contained boot floppy that securely wipes the hard disks of most computers.

DBAN will automatically and completely delete the contents of any hard disk that it can detect, which makes it an appropriate utility for bulk or emergency data destruction.
Disk Wipe Software Options

- **Wipe For Linux**
  Wipe is a secure file wiping utility.

- For wipe to be effective, each pass must be completely written.

- To ensure this, the drive must support some form of a write barrier, write cache flush, or write cache disabling.
Disk Wipe Software Options

- Macintosh Disk-Cleaning Software:
  - Disk Utility (built-in in Mac OS X, under "Security Options")
  - WipeDrive for Mac
Erase Hard Drive Data with WipeDrive

WipeDrive has been used to erase hard drive data on over 20 million hard drives! It is approved by the Department of Defense, and it is trusted by government agencies and major corporations.

Do you have a Mac? You will need WipeDrive for Mac.

How can getting rid of my PC expose me to identity theft?

Your discarded computer contains your personal information. Identity thieves know most people don't know how to correctly erase hard drive data before giving their computer away. These thieves target personal information on discarded computers and use it to steal your identity.

<table>
<thead>
<tr>
<th>Ways to Try to Erase Hard Drive Data</th>
<th>Is the Data Truly Gone?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simply Delete the File</td>
<td>No</td>
</tr>
<tr>
<td>Empty the Recycle Bin</td>
<td>No</td>
</tr>
<tr>
<td>Format the Hard Drive</td>
<td>No</td>
</tr>
<tr>
<td>Repartition the Hard Drive</td>
<td>No</td>
</tr>
<tr>
<td>Use WipeDrive to Erase Hard Drives</td>
<td>Yes!</td>
</tr>
</tbody>
</table>

Wait a minute! Can't I just erase hard drive data by using the Recycle Bin?

Many people think that deleting their files and then emptying the Recycle Bin will permanently get rid of those files. In fact, the Recycle Bin even tells you that emptying the Recycle Bin will permanently remove items.

Unfortunately, that is not correct. After emptying the Recycle Bin, your files can be easily retrieved by many data recovery programs and free software tools.
Disk Wipe Software Options

- **Blancco Data Cleaner**
- *(WAN Server editions available at TechSoup Stock)*
How to Wipe Multiple Drives at Once

- Blancco - Pro is a powerful data erasure solution for the server environment.

- Extensive server support guarantees high-speed, simultaneous data wipe up to 16 hard disks of any size per computer server.

- Once the hard disk(s) are cleaned, the software automatically generates a detailed erasure report with Hardware Asset Management information.
Certified Data Erasure Software

Blanco NIST Support Exceeds Data Erasure Standards
Blanco supports the National Institute of Standards and Technology (NIST) guidelines for firmware-based erasure of ATA and SCSI drivers. With its new and enhanced client erase software, Blanco adheres to the NIST.

Essential data erasure
Socially responsible and regulatory compliant companies are concerned about protecting confidential data and reducing their environmental footprint and seek a secure, ethical and cost effective solution to erase data.
Using Blanco you can ensure 100% data erasure of sensitive data within

Meet Blanco
Blanco has an international network of offices, representatives and partners around the globe.

Upcoming events:
Storage & Security Forum Luxembourg
June 9 - 10, 2009
Alannes Park Hotel, Luxembourg
PC World Videos

- Offer helpful videos on many PC topics, including erasing/wiping hard drives

Considering Digital Data

- Digital Data can pose an even greater privacy threat.

- People store PINs, passwords, and other sensitive information on them, and are likely to trade them in more frequently than their PCs.

- Also, wiping data can be extremely difficult.
Considering Digital Data

- If your device stores contacts and other information on a removable SIM card, start by taking the card out.

- The SIM card doesn't necessarily store all the data, though.

- It may store only phone book info, while call logs, photos, memos, and other information might reside in the internal memory.
To get rid of data, you may need to employ multiple reset commands--and those commands aren't always easy to find.

One Samsung phone requires ten different commands to delete all data.

Remember, if you want to keep the numbers stored in your SIM card, remove it before you delete anything!
Wiping Cell/Smart Phone/PDAs

Free Data Eraser

- The Data Eraser gives you all the tools you need to remove personal information like contact names and phone numbers from used cell phones. To receive instructions for your device, simply:
  - Select your cell phone manufacturer
  - Select your cell phone model
  - Provide your name and *email address.
  - Click the submit box

- The free Data Eraser instructions will be automatically emailed to you. Follow the easy, step-by-step instructions to erase your personal data.
Erase Cell Phone Data: Free Data Eraser

Select your cell phone manufacturer
Select your cell phone model
Provide your name and e-mail address
Click the submit box
The free Data Eraser instructions will be automatically emailed to you. Note: If you do not receive your email within 5 minutes, please check your spam filter.
Follow the easy, step-by-step instructions to erase your personal data.

New cell phone models are added every month, so be sure to keep checking in if your model isn't listed. You may also email data_eraser@wirelessrecycling.com to request the addition of a particular cell phone model to our Data Eraser tool.

*Required
By requesting this information, you agree to the terms of our Privacy Policy. If you would like to review our policy click here

More About Donations
- Overview
- Donate used cell phones
- Start a donation program
- Our recycling partners
- Frequently asked questions
Wiping Cell/Smart Phone/PDA

Free Data Eraser

- New models are added every month, so be sure to keep checking in if your model isn't listed.

- You may also email data_eraser@wirelessrecycling.com to request the addition of a particular model.
Where to find more information

Pass It On Center
Knowledge Base

www.passitoncenter.org/content

• See Overview of Sanitization (San 1-6 in Program Module/ Sanitization category) for more information about microorganisms and appropriate use of chemical cleaners
• See specific articles on cleaning computer
Questions?

Contact Us

- Liz Persaud at liz@passitoncenter.org
- Trish Redmon at trish@passitoncenter.org

if you have questions about the content of this webinar.
Thank You!

For Your Time & Participation!