Media Sanitization of Used Electronics

Federal Electronics Challenge Partner Call

Robin Billings, U.S. Environmental Protection Agency Region 4

August 2, 2012

Disclaimer

- The information in this presentation **does not** supersede any federal agency's policies, procedures, guidance, or requirements with respect to media sanitization and data security

- Federal agencies and facilities should discuss these and other data security issues with their facility/property management, and information technology and security experts

- The information in this presentation **is not** exhaustive guidance on media sanitization and data security

- Federal agencies and facilities should reference the National Institute of Standards and Technology (NIST) Guidelines for Media Sanitization (NIST Special Publication 800-88) for comprehensive information on media sanitization options

Terminology

Media sanitization is a *method* for ensuring data security of information stored on media

Media sanitization

Actions taken to render data written on media unrecoverable by both ordinary and extraordinary means

Data security

Preventing the unauthorized disclosure of information and ensuring confidentiality

Media Sanitization and Electronics Stewardship

- Media store data
- Sanitization prevents unauthorized disclosure of information and ensures confidentiality
  - allows for reuse
  - secures for recycling
- Media sanitization practices may impact electronics stewardship activities, particularly reuse and recycling
- Executive Order 13423 and 13514 require reuse and donation of electronic equipment
- Select the least destructive media sanitization method, which still meets security and confidentiality needs

Sources of Media

Media:	Where you might find it:
Paper or microforms	• Imaging equipment, including printers, copiers, scanners, facsimile machines and multifunction devices (MFDs) • Microfiche readers and microfilming machines
Hard drives	• Computer desktops and laptops • Some imaging equipment
Memory	• Most electronics
Removable electronic media (Floppies, CDs, DVDs, USB removable media, Zip disks, removable memory cards)	• As separate components • Within many electronics
Magnetic cassettes, cards, tapes and ribbon	• Audio and visual (AV) equipment • Tape recorders and players

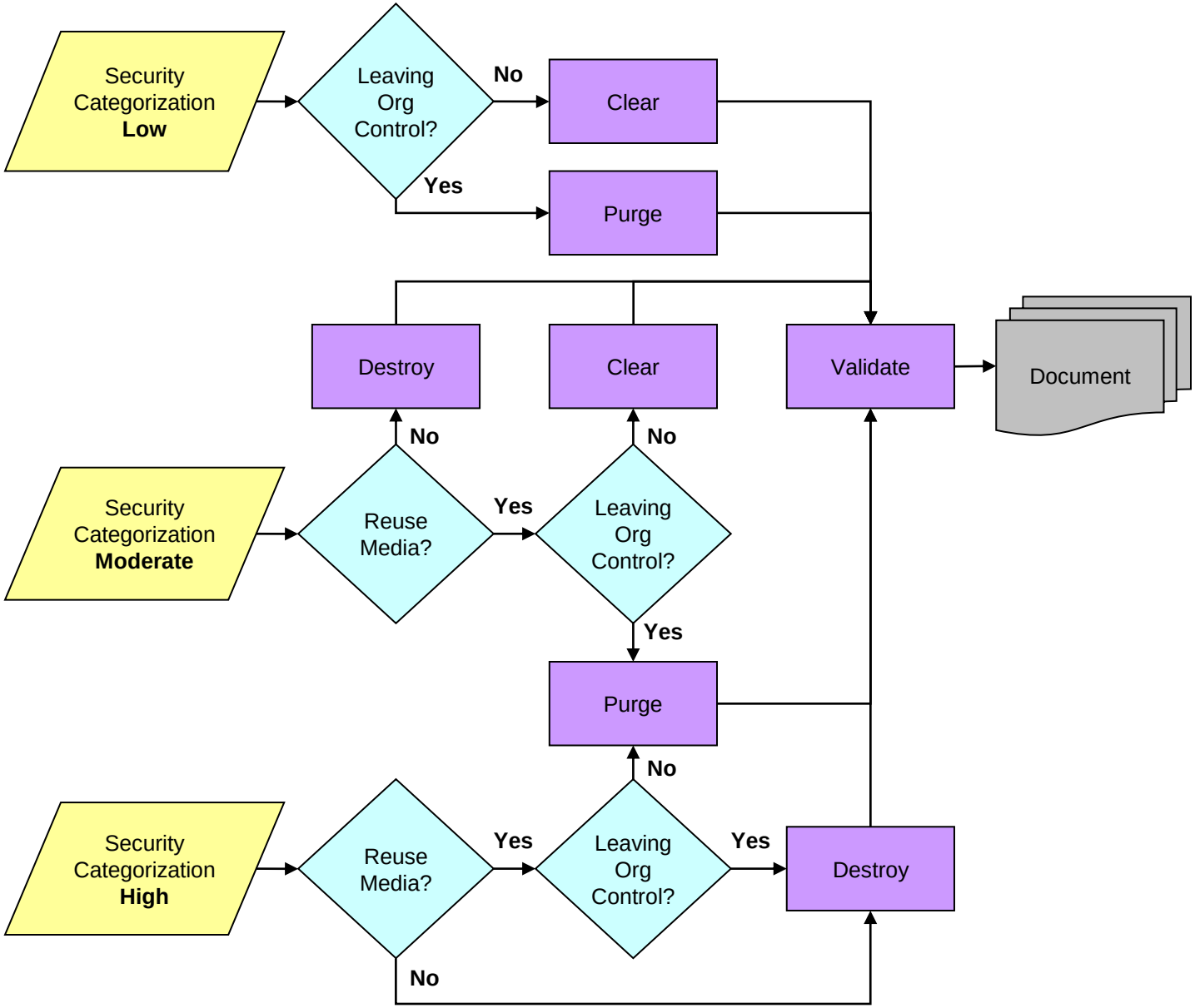
Options for Media Sanitization

1. **Disposal**: discarding media with no further sanitization actions
2. **Clearing**: removing data from media so that the data can not be retrieved through a robust keyboard attack
   - *example: overwriting*
3. **Purging**: removing data from media so that the data can not be retrieved through a laboratory attack
   - *example: degaussing*
4. **Destroying**: rendering the media unable to be reused as originally intended; residual medium may need to be able to withstand a laboratory attack
   - *example: shredding*

Considerations for Media Sanitization

- Type of media (i.e., optical, magnetic, or paper/film)
- Size of media
- Confidentiality and necessary security of the data on the media
- Cost of sanitization tools and staff, and available budget
- Availability of sanitization tools and staff
- Training and certification of staff
- Length of time available for sanitization

NIST Flowchart



Options After Sanitization

- Consider the impact of your media sanitization methods
- Media with low or moderate security classification may be sanitized and preserved for reuse
- Recycling facilities may be able to recover plastics and metals from destroyed media
  - Media that is sanitized through abrasive scraping, shredding, disintegrating or pulverizing may be able to be recycled
  - Media sanitized through chemical destruction may not be able to be recycled and may require special handling for disposal
- If media must be incinerated, look for a facility that practices energy recovery
- Use of some contracting vehicles may require special media sanitization considerations

Contact and Resources

- Robin Billings, U.S. EPA Region 4
  - Billings.Robin@epa.gov
  - 404-562-8515

- Federal Electronics Challenge: http://www.epa.gov/fec/
- Overview of Media Sanitization: http://www.epa.gov/fec/resources/sanitization.pdf
- Sample Policy and Guidance Language: http://www.epa.gov/fec/resources/sanitization_sample.pdf

Exceptional service in the national interest

Sandia National Laboratories

Go Full Circle

Reduce, Reuse, Recycle, Buy Green

Media Sanitization

Used Electronics Processing

SAND 2012-6049P

U.S. DEPARTMENT OF ENERGY | NNSA National Nuclear Security Administration

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Where We're Coming From

- Sandia is a National Nuclear Security Administration (NNSA) laboratory for the Department of Energy (DOE)
  - More stringent data security requirements than other DOE sites
  - Geographically isolated – New Mexico, USA

    (No passport required)

- Only covering processes at Sandia's New Mexico site
  - Other smaller Sandia sites self-manage or ship equipment and materials to us.

Britannica.com

Used Electronics Triage

Sandia National Laboratories

- Already vetted for internal reuse
- Donation occurs when possible
  - April 2012 “K-12 Computer Donation Event”
  - 25 Schools/Districts from around New Mexico
  - 1358 computers donated; along with monitors, parts, and office binders
  - No Hard Drives

TWENTY FIVE SCHOOLS from New Mexico benefitted from the Reutilization Department’s computer giveaway on Monday, April 2. (Photo by Randy Montoya)

End of Useful Life

- Shipped for basic domestic recycling
  - Desktops and Laptops (without hard drives)
  - CRT Monitors
  - Broken LCD monitors
  - Other mixed/broken electronics

- Shipped for refurbishment or constituent recovery
  - ISDN telephones
  - Whole circuit boards
  - Standard server blades
  - High performance “super” computers

Data Security in Processes

Sandia National Laboratories

- Cell Phones / PDAs / Radios
  - Internally sanitized by computer support department
  - Hydraulically crushed to make “unattractive”
  - Added to circuit boards for final domestic destruction & recycling
- Removable Electronic Media (REM)
  - All unclassified film, magnetic, solid state and optical media
    - Witnessed Incineration
  - Exception: Commercial Off The Shelf (COTS) CDs and DVDs
    - Recycled as polycabonate
    - Good value per pound for plastic

Data Security in Processes

Sandia National Laboratories

- Hard Drives

1. Physically removed from computer/device
2. Data is overwritten 7 times
   - Is this over-writing over-kill?
3. Hard drive is dismantled
   - Scrap metal is recycled
   - Neodymium magnets are recovered
4. Aluminum platter is degaussed
5. Aluminum platter is shredded and recycled

Policy Drivers

Sandia National Laboratories

- DOE Order 200.1A (2008) Info Tech Mgmt – points to:
  - DOE Order 205.1B (2011) – Cyber Security Mgmt
  - DOE Policy 470.1 – Integrated Safeguards and Security Mgmt
- DOE O 205.1B aims to be consistent with
  - National Institute of Standards and Technology (NIST)
  - Committee on National Security Systems (CNSS)
  - Highly Conservative:
    We treat everything as if it might be "National Security Information"
- See NIST SP 800-88 – Guidelines for Media Sanitization

NIST SP 800-88

Sandia National Laboratories

- Guidelines for Media Sanitization
  - 2.4 – “Studies have shown that most of today’s media can be effectively cleared by one overwrite.”
  - Careful to note in its “Media Sanitization Decision Matrix” that the method must be “agency approved”.

- Appendix A – Table A-1
  - Addresses many specific types of media and hardware
    - Hard drives
    - Disks/discs
    - Microfilm
    - Network routers!

When in doubt, burn it out...

DoD 5220.22-M

Sandia National Laboratories

- Became "National Industrial Security Program Operating Manual" (NISPOM), 2006
  - Cancels "US Aid" referenced document from 1995
  - Available at DoD Defense Security Service (www.dss.mil)
  - Sanitize everything to the level determined by your Cognizant Security Agency (CSA)

- The myth of the 3-pass DoD data destruction policy
  - In 2006, the DoD "removed all verbiage on single vs. multiple pass."
    - James Griffin, April 20, 2012

Lastly...

- A 5-page “Media Sanitization Considerations at Electronics End-of-Life” guide is available from the FEC.

- Thanks!

Samuel A. McCord
Solid Waste Recycling Planner
Sandia National Laboratories
Dept. of Regulated Waste & Pollution Prevention (P2)
(o) 505-844-8916; (f) 505-844-2403
samccor@sandia.gov
http://p2.sandia.gov