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## PURPOSE

This resource provides guidance to federal agencies and facilities on extending the life of electronic equipment in use at their organization.

## INTRODUCTION

Most computer hardware is expected to work for seven years, but the average lifetime of a desktop computer in the federal community is three years. Some electronics, like cellular phones, may be replaced as often as every year! The rapid turnaround of these products produces a significant waste stream, and the production of new equipment requires raw materials and energy for their manufacturing and transportation.

There are a number of activities that federal agencies and facilities can do to help extend the life of their electronic equipment.

Specific actions are check-marked and in green and **IMPORTANT NOTES** are capitalized and in red.

## EVALUATE EXISTING PRACTICES

The first step to extending the life of electronic equipment is to review the current situation at your organization. This review should consider the following questions.

### **What types of equipment and users do you have?**

All users at your organization probably do not have the same information technology (IT) needs. Some users may perform research or analysis that requires significant computing power or graphics capabilities. Others may need to use their issued equipment both in the office, and while on travel or teleworking. These differences may necessitate frequent equipment replacement for some users but allow for longer equipment lifetimes for others.

- ✓ Develop a list of the user groups at your organization and their different IT needs.

### **What is the current lifetime of different types of electronic equipment at your organization?**

This evaluation can be formal or informal, depending on your organization's size and available resources. An evaluation can determine the current lifetime of electronic equipment and/or evaluate different options for extending the average lifetime.

*The Value of Analysis:* An [Applied Information Economics Analysis](#) of the desktop replacement policy at the U.S. Environmental Protection Agency discovered that a four-year replacement schedule was the best economical choice and did not compromise productivity.

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Regardless of who performs the analysis and how detailed it is, the analysis should, at a minimum, consider the following:

- ✓ Existing policies, procedures or plans that require a specific lifetime or technology refresh rate for electronic equipment.
- ✓ Existing contracts or leases that require a specific technology refresh or turnover rate for electronic equipment.
- ✓ Approximate turnover rate, by comparing the number of purchases and disposals (reuse outside the organization or recycling) made each year, to the number of employees.
- ✓ Average lifetime, based on data from asset or property management systems.
- ✓ Cultural issues that may hinder change (e.g., “we always replace laptops every two years”).

### **How does your organization acquire new electronics?**

Your acquisition and procurement process may greatly impact your ability to extend the life of equipment in use at your organization. Existing contracts may help or hinder your ability to upgrade existing equipment, or keep the equipment in use longer than the contract-specified timeframe.

- ✓ Determine what electronic equipment is purchased; what is leased; and what is provided under services contracts, such as seat management or managed print services.
- ✓ Examine these existing contracts for technology refresh, turnover, and take-back clauses.
- ✓ Determine if your electronics acquisition is handled solely with your organization, or if it centrally controlled by regional or national component.

### **Does your organization need to, and are you able to, extend the life of electronic equipment?**

The answers to all of the above questions should give you a good idea of the current lifetime of electronic equipment at your organization; what may be preventing you from extending this lifetime; and how you may be able to make improvements.

If needed, develop new or revise existing policies, procedures and guidance to specify a four year, or more, refresh rate. Clearly define IT and user roles and responsibilities in these documents and notify IT, acquisition and procurement, and end users. The remainder of this document may help you define these roles and responsibilities.

## **PREVENT PROBLEMS AND MAINTAIN EQUIPMENT**

After required technology refresh rates, diminished performance of existing equipment is a frequently cited reason for new equipment procurement. Preventing problems by properly maintaining computer equipment can improve the performance of existing equipment and keep it in use longer.

Security can lead to longevity, by ensuring that equipment is not slowed by computer viruses, spyware or malware. Most, if not all, federal organizations maintain virus/spyware/malware protection on their computer equipment by regularly updating protection software and performing scheduled scans on computer equipment.

- ✓ Make sure computers that are not regularly attached to the network (e.g., equipment checked out by travelers or teleworkers) have updated protection software and are regularly scanned.

Maintaining installed operating systems and software can also ensure that computers are not slowed by exploitation of security vulnerabilities or general software bugs. Again, most, if not all, federal organizations have systems in place to apply software updates across their computer equipment.

- ✓ Consider different maintenance schedules for critical and non-critical updates, to reduce user frustration. Critical updates may require immediate application, while non-critical updates can be held for a scheduled update window when users will not be impacted (middle of the night) or that users can plan for (during the lunch hour).

While installed software is intended to increase productivity, it can frequently be the source of poor performance.

- ✓ Keep an inventory of software in use at your organization (both number of licenses and installed base).
- ✓ Uninstall unused or unauthorized software to free up disk drive space and eliminate potential security and maintenance issues.
- ✓ Limit or eliminate autostarting programs (e.g., software that starts automatically after the operating system loads) which can needlessly tie up memory resources.
- ✓ Control unnecessary or insecure software installation by limiting the specific programs, software types, or versions of software that can be installed. Consider blocking users from installing or uninstalling software on their own machines.

Regular hardware maintenance can also improve equipment performance.

- ✓ Regularly check, fix and defragment hard drives.
- ✓ Consider regular physical cleaning of computer equipment to remove dust and debris that may accumulate in equipment during regular use. Focus on computers that are near air vents or returns, are taken out into the field, or are over three years old.

**IMPORTANT NOTE:** If your organization uses leasing or seat management, set the technology refresh rate for these contracts to four years. Also consider requiring maintenance or extended warranties to ensure the equipment continues to perform well for those four years.

### EXTEND USEFULNESS

Even with regular maintenance, equipment performance may suffer due to problems with specific components. Fixing or replacing these components may improve performance without the need for new equipment.

One broken component does not necessarily mean you have to toss the entire desktop setup.

- ✓ Replace damaged cables and connectors. Check to make sure the new cable or connector is not exposed to a hazard that might damage it, such as lying underneath heavy objects; being forcibly bent or pulled by unnecessary weight; or being placed near objects with moving parts, such as fans.
- ✓ Replace well-worn peripherals, like keyboards and mice, which may collect debris and dirt that reduce their functionality.
- ✓ Hard drives with bad sectors can be fixed (to block the bad sectors from use), or replaced.
- ✓ Keep a small inventory of these components available, for quick replacement.

If a user is having a problem with a specific component of a desktop system, upgrade just the problematic component.

- ✓ Add memory (RAM) to increase the functional speed of a computer.
- ✓ Add additional disk space or detached storage for users that have large software programs installed or must keep many large electronic files on hand.
- ✓ If a monitor is too small for a user, or their desktop computer needs an upgrade, consider upgrading just the monitor or computer and not purchasing a bundled desktop system.

Implement a “bumping” or “trickle-down” policy for electronics.

- ✓ Assess used equipment. Consider its working condition, age, installed components, and possible future users.
- ✓ Utilize property/asset management software to track available equipment and redistribute it.

### EDUCATE USERS

Educate employees about the need for electronic equipment lifetime extension.

- ✓ Calculate the environmental and cost benefits of extending the life of electronics, and include this information in your employee outreach materials.
- ✓ Highlight federal goals and reporting requirements.
- ✓ Provide information about your facility and agency’s policies, procedures and guidance.

Encourage employees to protect the IT equipment at their desk.

- ✓ Ask users to maintain air flow around their computer and remove nearby clutter, which can reduce dust and debris accumulation and prevent overheating.
- ✓ Require or encourage employees to protect all of the electronic equipment in their workspace by connecting it to a surge protector/power strip.
- ✓ Discourage eating and drinking near electronic equipment.

Employees can also clean up electronic clutter on their computers.

- ✓ Provide instructions to employees on how to delete temporary files; clear cache, browsing history, and cookies; and empty electronic trash bins, to free up storage space.
- ✓ Encourage employees to save on the network or external drives and media, when appropriate.
- ✓ Remind employees to backup their data and provide instructions for saving to network drives or detached media.

### MEASUREMENT AND REPORTING

Measuring the lifetime of your electronic equipment is the only way to determine if you're making progress and meeting and agency or facility requirements.

- ✓ Use property/asset management software to determine the average lifetime of equipment.
- ✓ Estimate the lifetime of equipment based on replacement rates.

### CONTACT INFORMATION

If you have questions related to this resource or need other assistance with the Federal Electronics Challenge, please contact your Regional Champion. The list of FEC Regional Champions is available at <http://www.federalelectronicschallenge.net/champions.htm>.

Partners may also request technical assistance by sending an email to [partner@electronicschallenge.net](mailto:partner@electronicschallenge.net).

### FEDERAL ELECTRONICS CHALLENGE

Web site: <http://www.federalelectronicschallenge.net/>

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