



## **Bane to Boon: A Better Way to Manage Used IT Equipment**



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# Introduction

Changes in business technology — from the proliferation of mobile devices to the rapid adoption of server virtualization and cloud computing — have made their mark on the IT landscape.

Businesses of all sizes now operate distributed systems and hosted IT services on a scale unimaginable just a decade ago. Low-power, high-density servers and converged IT infrastructure have inexorably changed the way modern data centers are equipped and managed. Meanwhile at the client level, there's been a seismic shift as end-user devices evolve from traditional wired PCs and laptops to wireless-enabled tablets and smartphones over the course of just a few years.

While all of these innovations have unquestionably improved information technology's ability to boost efficiency, scale and business performance, the sea change comes with its own set of challenges. Vast amounts of IT infrastructure is taken out of service every year either because it has reached the end of its useful life in its current form, or it has been displaced by one of these newer, disruptive technologies.

One significant consequence of disruptive innovation in IT is the burgeoning amount of decommissioned tech gear piling up in the storage rooms and warehouses of enterprises worldwide. Gone are the days when out-of-service IT assets could be stuffed in a closet, hauled to a dumpster or dragged to the nearest landfill to be discarded like so much office trash. Used IT components are now a liability. Business decision makers today have a new variable when it comes to evaluating the ROI of IT modernization, namely how to manage end-of-life IT assets while managing concerns about data security, the environment, compliance and risk management, and the ability to recoup technology investment dollars.

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In this whitepaper, we'll examine the challenges — and opportunities — presented by IT lifecycle management and discuss effective IT Asset Disposition (ITAD) strategies that can be employed to extract value from old electronics equipment while safeguarding data, meeting regulatory requirements and protecting the organization's brand.

## ITAD: A Market View

What was once an afterthought in IT lifecycle management is now top of mind for buyers and sellers of electronics equipment worldwide. Enterprises this year will retire more IT equipment than ever before, according to the technology analyst firm Gartner. Couple that with global movements to improve environmental responsibility and sustainability — along with strong demand for refurbished electronics in developing markets — and the rising ITAD imperative becomes clear.

To appreciate how the need for managing IT equipment throughout every phase of use is affecting technology markets, witness the explosive global growth in the business of properly handling used electronics equipment. According to Transparency Market Research, the global ITAD market will take in nearly \$10 billion this year while handling 48 million metric tons of discontinued or excess technology gear. TMR predicts this addressable market will swell to \$41 billion and 141 million tons of so-called “e-waste” by 2019, a CAGR of better than 32 percent.

Despite those heady figures, the U.S. Environmental Protection Agency estimates that the amount of e-waste being properly recycled or reused hovers at a mere 12 percent. The remaining 88 percent ends up being trucked to landfills, shipped to incinerators or otherwise inappropriately discarded.

Indeed, the market for the collection and processing of IT waste products in general, and reusable storage media in particular, shows few signs of retraction. Several IT trends and emerging technologies along with a heightened awareness of IT security, corporate risk management and environmental responsibility promise to fuel continued growth in ITAD at large.

## The Used Equipment Conundrum

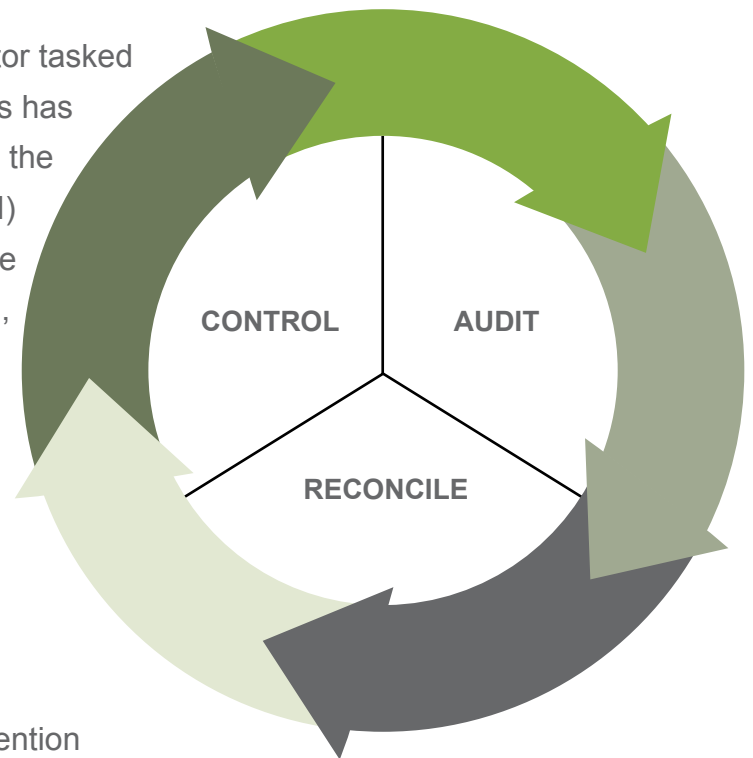
The desire for continuous improvement and competitive advantage drives constant change in the IT infrastructure of nearly every modern organization. Business leaders, CIOs, IT administrators and, increasingly, line-of-business managers continue to explore and implement the latest technologies in order to grow their businesses.

In turn, the desire to leverage newer and better technologies to improve business outcomes fuels a steady supply of new products from technology manufacturers. Each new wave promises better performance, improved efficiency, increased scale and lower costs.

Technology vendors and OEMs roll out IT updates with greater frequency, spurred on by competitive pressure and the need to meet their own goals for profitability and growth.

That's turned what were once mostly linear processes in IT into a rapidly spinning IT lifecycle with five distinct phases: planning, acquisition, deployment, management and retirement. This continuous refresh-cycle loop churns at a speed determined by both the business challenges facing the organization and the pace of innovation and development from its IT vendors and partners.

The job of the CIO, GM or IT administrator tasked with managing technology infrastructures has traditionally concentrated on maximizing the organization's return on investment (ROI) by focusing on the first four phases of the IT lifecycle, namely planning, acquisition, deployment and management. The objectives for these business decision makers are to purchase IT equipment at the best possible price, deploy it efficiently, then maintain that equipment in a way that will extend its usefulness for as long as possible.



Executive controls and management attention remain fine-tuned to the planning, acquisition, deployment and management stages of the IT lifecycle because most ROI calculations focus on justifying the purchase and support of IT assets based on how those dollars can benefit the business. Organizations often overlook the final phase — retirement — seeing it only as an inert step along the path to new ROI metrics based largely on the costs associated with planning for and procuring replacement equipment.

Managers who ignore the impact of the final retirement phase on their overall IT ROI do so at their peril, however. It's increasingly clear that the disposition stage of the IT lifecycle is far from benign, and the costs associated with it can have profound impact on the success of an organization's technology investments over time. Factors increasingly affecting the final stage of the IT lifecycle include:

## The Environment:


In the majority of U.S. states and in nations around the world, governments are cracking down on the improper disposal of electronic waste. In the U.S., the effort is being guided by the National Strategy for Electronics Stewardship, a multi-agency set of federal guidelines designed to guide e-waste disposal legislation. That effort is mirrored globally by the United Nations' Solving the E-waste Problem (StEP) initiative, which addresses electronics disposal in developing countries.

Regardless of jurisdiction, the stepped-up enforcement efforts have significant financial implications for businesses. In 2014, telecommunications giant AT&T agreed to pay nearly \$52 million in civil penalties, compliance improvements and other legal fees for illegal dumping of hazardous electronic waste in California. The case, the result of a 2011 investigation by the California District Attorney's Office and the state Department of Toxic Substances Control, found that AT&T "routinely and systematically [sent] hazardous wastes to local landfills that were not permitted to receive those wastes." According to the investigation, some 230 AT&T facilities across California had improperly disposed of electronic waste over a nine-year period.

Avoiding such embarrassing and costly outcomes is imperative, but compliance with environmental guidelines is not without challenges. The pace at which new environmental laws governing the disposal of electronics are being created makes it difficult for organizations to stay current and compliant with the regulations. For companies that do business nationally or internationally, rules often differ widely from location to location. The costs of working with an experienced and certified recycling partner to navigate this maze of green regulation and ensure compliance with even the most stringent laws should be combined with data security and integrity expenses to get a true sense of how the retirement portion of the IT lifecycle impacts ROI.

## Security and Compliance:

Today, every IT device that has ever been connected to the corporate network — from the most powerful server to the lowliest desktop printer — has some form of data storage capability. That makes every pile of unused IT gear a trove of sensitive data and a significant point of vulnerability for the organization.



# 74%

## **Amount of discarded HDDs that contain recoverable data.**

*Source: Massachusetts Institute of Technology*

Simply deleting files or running built-in data erasing utilities is typically futile. Computer forensics tests have consistently shown that while consumer data deletion efforts might frustrate casual snoops, a determined cybercriminal can recover data from almost any discarded drive that has been erased or reformatted by the user. A study by the Massachusetts Institute of Technology titled *Remembrance of Data Passed: A Study of Disk Sanitization Practices* analyzed hundreds of disk drives purchased on eBay as well as at computer stores, salvage companies and swap meets. The study found that nearly three quarters (74 percent) of the drives contained old data that could be recovered and read. About 17 percent contained fully functioning operating systems with user data that required no particular effort to recover. More than a third (36 percent) had been reformatted but still contained old data that could be recovered.

### **Security and Compliance:**

In 2009, a team of journalists investigating global electronic waste disposal were able to purchase HDDs from an e-waste dump in Ghana for less than \$40. One of the drives the team bought contained classified information from defense contractor Northrop Grumman including details of the company's contracts with the Defense Intelligence Agency, the National Aeronautics and Space Administration and the Transportation Security Agency.

In 2010, CBS News reporters combed the HDDs from several discarded photocopiers and found a cache of sensitive documents including a New York construction company's design plans for a building near Ground Zero in Manhattan along with 95 pages of pay stubs with names, addresses and Social Security numbers and \$40,000 in copied checks. The sting also turned up more than 300 pages of individual medical records from a New York-based medical insurance company.

Within the past several years, laws have been passed outlining stricter guidelines and greater penalties for data security, making it illegal for organizations to carelessly or irresponsibly dispose of critical or personal data, whether it resides on the storage media of massive corporate servers, basic desktop PCs and laptops or in unassuming devices at the edge of the network like multi-function printers (MFPs) and set-top boxes (STBs). The storage media in all such devices come under the jurisdiction of laws and regulations like the Health Insurance Portability and Accountability Act (HIPAA), Gramm-Leach-Bliley Act (GLBA), Fair and Accurate Credit Transactions Act (FACTA), Federal Information Security Management Act (FISMA) and the Sarbanes-Oxley Act (Sarbox).

Organizations that allow such sensitive data to fall into the wrong hands through mishandling of decommission IT assets run the risk of lawsuits, regulatory fines and sanctions, loss of customer confidence and lasting damage to their brand. In May 2014, a study by the Ponemon Institute and IBM found that the average cost of a single data breach to a company was \$3.5 million, 15 percent higher than it was just a year earlier.


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Even if the environmental concerns weren't enough to persuade them to dispose of IT assets responsibly, companies can no longer simply throw away IT storage devices because it is largely illegal to do so. Storage drives in every retired IT asset must be certifiably wiped clean of sensitive data before they can be safely and legally disposed of. The costs of having these devices erased to National Institute of Standards and Technology (NIST) 800-88 standards or better must be factored into the total cost of ownership in the context of calculating return on IT investments and benefit to the business.

### **Residual Value:**

Thus far we've focused on the hidden costs associated with the retirement phase of the IT lifecycle. But perhaps the best reason for organizations to pay more attention to this segment of the process is the large — and often ignored — opportunity to extract residual value from unused and surplus IT assets.





Thriving secondary markets exist — particularly in emerging countries in Asia, the Middle East, Africa and Latin America — for refurbished IT equipment. Systems integrators, white-box manufacturers and IT distributors in these developing regions continue to generate strong demand for HDDs, SSDs and other components needed to bring technology infrastructure up to the standards established in the world's mature markets.

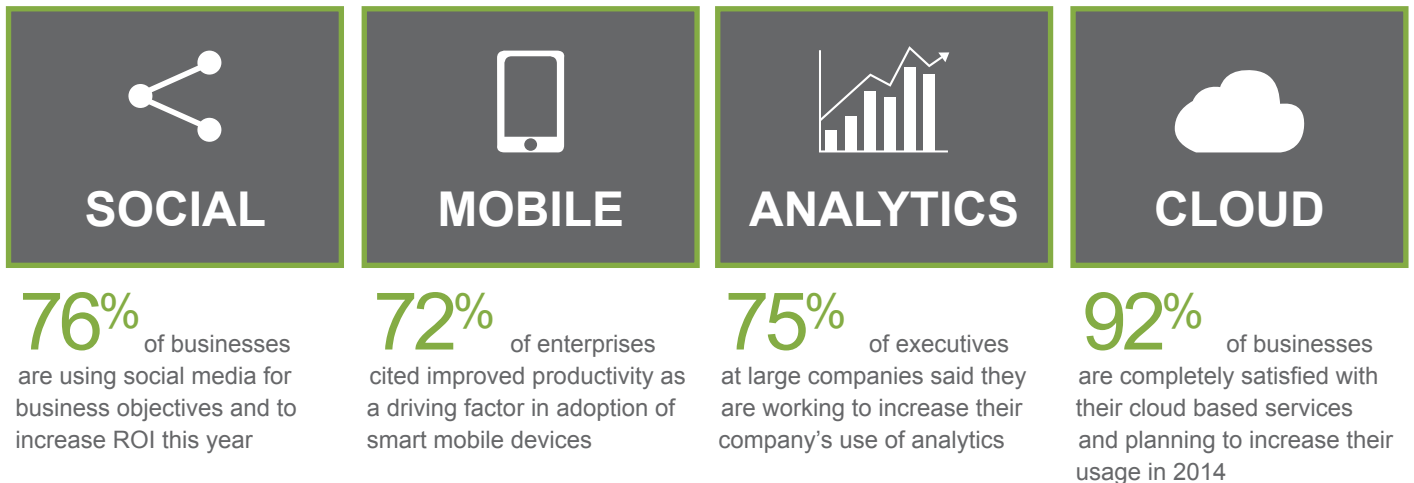
The best returns in this aspect of asset disposition go to those business leaders and IT executives who can act quickly and decisively to recover value from their IT assets. Despite their inherent and lasting value, used electronic equipment and components such as storage media can depreciate up to 10 percent per month once they are taken out of service. This reduced value is exacerbated by the physical costs of storing the assets, a cost that includes warehouse staffing and other real estate charges such as taxes and insurance.

Engaging an ITAD partner who can get large batches of price-sensitive components like data storage media processed and on the global secondary market quickly results in lower costs, less depreciation and higher return for the asset owners. While a number of factors weigh on these kinds of transactions including the condition, age and functionality of the equipment being processed, industry averages now find asset disposition firms returning between 60 and 70 percent of revenues from sales on the global market back to the equipment's original owners, according to Gartner. This makes robust repair, reformatting and redistribution of storage media, for example, far more attractive and lucrative for organizations than the traditional methods of recouping investments through raw recycling and materials recovery practices.

These so-called “clawback” revenues greatly improve the ROI calculus of IT projects. The recovered capital can be used to offset the negative effects of the other retirement phase aspects — often with enough left over to help fund the next round of IT asset acquisition.

# DISRUPTIVE FORCES

The five-phase dynamic of the IT lifecycle has created ample challenges for technology-driven organizations. As we noted earlier, one of the factors that compresses refresh cycles is disruptive innovations on the parts of the OEMs and technology vendors. It stands to reason, then, that periods of heavy activity in emerging technologies would put organizations under even more pressure to manage every phase of the IT lifecycle, including a commensurate increase in equipment retirement volume.



Sources: UBM, IDC, Gartner

That's precisely where most organizations find themselves today. The emergence and confluence of several emerging technology trends is laying waste to the concepts of traditional IT infrastructure design and management. As a result of the so-called SMAC technologies — Social, Mobile, Analytics and Cloud — businesses now find themselves decommissioning more IT equipment at a faster rate than ever. Some of the ways these innovations are affecting modern organizations include:

- The continued shift away from traditional desktop and laptop computers and toward more business-enabled mobile devices. This trend introduces new security and recycling challenges for organizations supporting a growing number of devices and form factors. The shorter lifespans and rapid refresh cycles from manufacturers, however, may lead to higher residual values.
- IT's massive cloud computing transformation initiatives — along with more focused infrastructure trends such as the hyper-connected Internet of Things and distributed Fog Computing — are roiling enterprise data centers architectures. These trends are forcing IT leaders to take an unprecedented amount of server and storage equipment

out of service in favor of new Web Scale and hyperscale converged infrastructure. That action is putting a large amount of high-end, enterprise-grade IT equipment into the surplus supply line, a factor that can throttle values but also serves to increase market confidence in the quality and reliability of refurbished assets at large.

- Updates to Microsoft Corp.'s ubiquitous Windows operating systems are pushing organizations to upgrade hardware in order to take advantage of new features and capabilities. The scheduled end of life for the Windows XP desktop operating system in April 2014 and looming end of support for Windows Server 2003 in July 2015 renders more than a quarter of the PCs and servers in the U.S. — and as many as 50 percent of those in China — obsolete.

Organizations need to consider not only how the IT lifecycle looks today, but how emergent technology trends are likely to impact infrastructure decisions in the near future. Refresh cycles calculated on legacy use of desktop clients and on-premises applications will look very different viewed through the lens of cloud adoption and large-scale mobility initiatives.

## Selecting an ITAD Partner

Business leaders concerned about secure, efficient, responsible and cost-effective retirement of enterprise IT assets must know what to look for in an ITAD provider to ensure a successful relationship. Here are five key considerations for choosing an asset disposition and revenue recovery partner when it's time to haul away the old to make room for the new:

**“Clawback” revenues can help recoup valuable IT investment resources, which are often used to pay for infrastructure upgrades and new IT initiatives.**

### Diligent Data Security:

Job One when taking IT assets with storage media out of service is ensuring the internal hard drives are handled properly and that sensitive corporate data is erased beyond recoverability. Reputable ITAD providers will freely share their methods of data eradication, which typically include data wiping and erasure to industry-recognized NIST 800-88 standards.

And remember that the integrity of the data goes beyond the actual HDD processing at the ITAD provider's facility. Chain of custody for devices in transit should be assured and documented. Most ITAD partners will welcome a tour of their plant and may even offer the ability to witness the destruction of hard disk drives either in person or via streaming Web video.

## **Environmental Commitment:**

With the security of data and storage media assured, the next consideration is environmentally responsible handling for items that must be disposed. Look for an ITAD partner who certifies a “zero-landfill” policy and either has — or contracts with — a final disposal firm with R2 (Responsible Recyclers) or e-Stewards certifications. These industry-standard certifications ensure that all components that can’t be reused whole are processed to recover valuable core elements that can then be recycled into new products. At no point in the ITAD process is it acceptable to simply dismantle IT devices and ship the remains to a landfill for crude disposal.

## **Regulatory Compliance Experience:**

When it comes to getting rid of equipment that houses sensitive and often highly regulated data, the good word of the ITAD partner typically isn’t enough to satisfy regulatory compliance requirements. Businesses that come under the jurisdiction of laws and regulations such as HIPAA, GLBA, FACTA, FISMA and Sarb-Ox can no longer simply throw away IT storage devices. A suitable ITAD partner must certify that its services meet the stringent data disposal rules set forth in the various regulations. A trustworthy ITAD firm should also be prepared to supply meticulous records detailing the receipt, processing, destruction and disposal of each device entrusted to it.

## **Yield and Clawback Capabilities:**

As noted earlier, the traditional view of IT-asset disposal and recycling as an expense to the business is shifting thanks to the burgeoning reverse distribution business, where unused and surplus gear is reconditioned and resold in secondary markets around the world.

This “clawback” revenue opportunity can help recoup valuable IT investment resources, which are often used to pay for infrastructure upgrades and new IT initiatives. IT decision makers should query ITAD providers about their revenue recovery policies, the terms of payment — either upfront or on commission — and the policies in place that affect clawback payments on items that are returned under warranty from the secondary-market buyers.

## **Downstream Reputation:**

ITAD firms that also serve as reverse distributors have a split business model serving two sets of clientele. The upstream component refers to the enterprise IT organizations, data center operators, system integrators, content services firms and telecommunications companies that source the ITAD partners with used IT equipment. The downstream

component encompasses buyers on the secondary market — usually systems integrators, white-box builders and mainline distributors — who purchase refurbished equipment for use and sale often in emerging markets overseas.

Most IT infrastructure owners will deal with an ITAD firm in a strictly upstream relationship. But, while IT providers may not care much where the used gear goes once it leaves their purview, the downstream reputation of the ITAD partner is important. Legitimate ITAD companies will offer transparency and visibility into their offshore, downstream business as a way to highlight their commitment to quality and their ethical practices. An ITAD firm with solid downstream relationships and robust reverse distribution sales will be better able to handle large volumes of disposed equipment properly, will be able to refurbish a greater percentage of the retired equipment and, as a result, will offer better revenue recovery opportunities and fewer returns.

## Developing an Effective IT Retirement Program


Taking an aggressive approach to all five phases of the IT lifecycle — including the retirement stage — puts executives and IT decision makers in the best position to optimize the ROI of their technology investments. The focus of a winning IT retirement program is to maximize the financial return for used and surplus while minimizing organizational and brand risks associated with decommissioned technology infrastructure assets. Following these steps will help the organization achieve those goals:

### Select a Partner:

As we've discussed, the fundamentals of IT asset disposition and investment recovery require experience and specialization in a number of competencies well outside the core focus of most businesses. How well a company manages its IT infrastructure retirement, therefore, usually depends on the skill set of an ITAD outsourcer. Using the above criteria to contract with a reliable IT partner who can handle both asset recovery and asset disposal — and can integrate well with a client's systems and culture — gives the organization the best chance for success.

### Conduct an Assessment:

Many organizations maintain detailed inventories of IT assets in service, but tend to fall short when it comes to quantifying out-of-service items. IT inventories are also often segregated into silos determined by technology functions and capabilities or by line-of-



business responsibilities. Both factors limit the visibility into total asset retirement challenges and opportunities. In conjunction with the chosen ITAD partner, conduct a thorough assessment of IT assets across the organization to gain a more complete picture of retirement and disposition needs and the resources required to address them.

### **Narrow the Focus:**

While the assessment is designed to offer a big-picture view of the ITAD situation in the organization, the actual program should begin not with a sweeping, company-wide effort, but rather with a smaller, more manageable effort that focuses on a specific requirement (such as the disposition of laptops from one department) or a single, well-defined IT project already being planned. Narrowing the focus allows the organization and its ITAD partner to iron out details and hitches in the process while testing their relationship in a real-world trial.

### **Expand the Program:**

With a smaller IT asset recovery and retirement program under their belt, most organizations are ready to expand the program to other parts of the business. Thoroughly documented processes from the initial trial and integration efforts with the ITAD partner can be used to inform the company-wide program and act as a template for ongoing, institutionalized asset disposition.

### **Monitor, Measure, and Adjust:**

Business leaders committed to Lean and Agile project management schemas understand well the use of feedback loops and the value of continuous process improvement. Effective ITAD programs benefit greatly from such strategies. Defining the critical steps in the asset retirement and disposition process and assigning metrics for success give the organization a way to measure the effectiveness of the program and make real-time adjustments that can both lower costs and speed used equipment to market to maximize revenue returns.

# Conclusion

Radical changes to the architecture and management of modern IT systems, distributed content networks and enterprise data centers are putting renewed emphasis on today's rapid pace of technology churn and the growing amount of IT equipment being taken out of service. Organizations that had traditionally focused on the front-end of the IT buying cycle now must factor in costs associated with IT asset retirement — costs that include critical security and environmental considerations — in order to gain a complete picture of their IT investments.

Businesses looking to avoid costly and embarrassing data loss, expensive regulatory compliance violations and brand-damaging environmental and sustainability transgressions now understand they must take an aggressive approach to the retirement and disposition of their unused and surplus assets.

But this increased awareness of the criticality of ITAD is not only improving security postures and reducing risk in progressive organizations. The emergence of ITAD specialists who can help manage IT asset retirement as well as refurbish and remarket electronics in secondary global markets has created a valuable new source of IT investment capital for IT infrastructure owners.

Viewing ITAD as a formal business process to be integrated with the efforts of a trusted and experienced partner gives these organizations a way to boost bottom lines with IT retirement programs designed to lower the costs of secure and sustainable asset disposition while maximizing recovered value from decommissioned assets.

## About

CNE Direct helps the world's most recognized brands realize maximum value recovery from their storage assets, securely and responsibly. Founded in 2002 with a bold new vision for IT asset disposition, CNE is a storage asset value recovery specialist focused on making the environmentally responsible disposition and purchase of high-quality used and surplus technology goods more secure, less complex and more beneficial for all partners. Our superior ability to rehabilitate IT storage media and our reputation as a trusted supplier to distributors around the world translate to maximum investment recovery for OEMs and ODMs, component makers, service providers, enterprise IT organizations, carriers, content providers and other ITAD partners. Headquartered in Peabody, Mass., CNE Direct can be reached at (877) 741-8686 or on the web at [www.cnedirect.com](http://www.cnedirect.com).