

The Intersection of AI and IT Sustainability: How Asset Life-Cycle Management Can Advance Innovation



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IDC Opinion

As organizations pivot to capitalize on generative AI (GenAI) technologies, they are investing in the requisite IT infrastructure across the IT estate, from cloud to datacenters and end-user devices such as desktops and notebooks. At the same time, organizations are identifying assets for end of use, decommissioning, reuse, and cascading to achieve financial and sustainability goals. These developments bring IT asset life-cycle management to the forefront of the intersection between AI and sustainability.

IDC research shows that even as a vast majority of organizations include IT recycling and asset disposition within sustainability policy and initiatives, most enterprises struggle to implement an asset life-cycle management strategy that includes planning, deployment, optimizing ongoing operations, and efficient, sustainable disposition practices to manage end of life, including reuse and recycling.

Most IT organizations have prioritized data security and governance across the life cycle as a critical requirement for asset life-cycle management. For help, CIOs, CFOs, and sustainability leads are increasingly considering third-party service providers that can be more efficient and effective in accomplishing these multipronged IT asset management goals and achieving both business and sustainability outcomes.

IDC research shows that 76% of organizations include IT recycling and asset disposition within sustainability policy and initiatives. At the same time, enterprises continue to struggle to implement a life-cycle approach to IT asset management that includes planning, deployment, optimizing ongoing operations, and efficient, sustainable disposition practices to manage end of life.

(Source: IDC's Used Equipment Market Survey [February 2024]; N = 1,319)

To help open budget to reinvest in GenAI technologies and innovation, IT asset life-cycle management services from hardware asset management (HAM) and IT asset disposition (ITAD) providers offer a critical opportunity to understand the residual value of assets at any point in their life cycle.

IDC research shows that organizations evaluate HAM and ITAD providers on their ability to provide sustainability metrics, particularly CO₂e reporting for product circularity. To complete the business case, security services, including certificates of data sanitization, are critical to address the end-of-use “danger zone” for data security when managing IT asset life cycles.

Situation Overview

The next phase of the market transition toward AI Everywhere will see organizations focus on delivering quantifiable business impact from GenAI investments. IDC sees the business impact of GenAI playing out across three broad categories: productivity gains, compelling customer experiences, and new revenue streams.

As organizations put their GenAI strategies into action, they are focusing efforts in three areas, all of which have implications for the use of asset life-cycle management to help advance technology innovation:

- **GenAI Use Cases:** Prioritizing IT hardware requirements through improved asset management strategies, both in the datacenter and across end-user devices, enables the alignment of key GenAI use cases to deliver quantifiable business impact.
- **Partnerships:** Successful GenAI adoption depends on selecting the right mix of partners, including local and global players, who possess the speed and depth capabilities to drive the necessary innovation.
- **Investment Sources:** An IT asset management provider with the right capabilities can help organizations improve asset utilization, recover residual value from end-of-use assets, and achieve sustainability goals across the business.

CIOs and IT managers are struggling to manage these pressures and deliver an overall GenAI strategy. When it comes to assessing IT infrastructure portfolios and opportunities to balance the need for IT equipment refresh with extracting value from existing assets, they are also layering in critical requirements for addressing security and sustainability in asset life-cycle management.

The AI Era: Organizations Pivot to Capitalize on GenAI

As organizations pivot to capitalize on GenAI, they are investing in the requisite IT infrastructure platforms across the IT estate, from cloud to datacenters and end-user devices such as desktops and notebooks.

An August 2023 IDC GenAI study showed that 29% of organizations say new investment for GenAI-related projects will be for AI-specific server and storage hardware in on-premises/colocation datacenters as well as remote edge locations. Overall, GenAI workloads will be deployed across a mix of cloud, on-premises, and colocation datacenters and edge locations. IDC research consistently shows that cloud services are only part of the portfolio and not necessarily dominant at this early stage. Organizations are seeking to do their own R&D to maintain control over intellectual property (IP) and ensure control over data. Control of data and IP is a major concern in the GenAI area, both for new GenAI and as infrastructure is cycled to new uses and/or decommissioned.

For PCs, IT leaders are addressing several factors. First is the pending refresh of the large number of PC assets acquired during the COVID-19 crisis to enable the sudden shift to remote work. Second is the end of service of Windows 10 in 2025, which will have upward pressure on refresh cycles. Third is the need to procure the new generation of AI-enabled PCs (i.e., those with CPUs with higher capacity NPUs [neural processing units]) to drive enhanced AI experiences, especially for certain personas in the organization. IDC expects momentum to increase as developers create superior experiences that rely on advanced CPU capabilities.

Taken together, IT leaders will have a large opportunity within their existing infrastructure to cascade assets to other employee groups with lesser computing requirements within the organization, or to resell the assets to gain residual value.

Importance of Sustainability and Product Circularity

Sustainability challenges abound in the AI Everywhere era and represent a particular need for collaboration across IT leaders, sustainability leaders, and LOB leaders, as the C-suite will be driving the charge. IDC predicts that in 2026, sustainability performance will be viewed as a top 3 decision factor for IT equipment purchases. More than half of requests for proposals will include metrics regarding carbon emissions, material use (including circularity), and labor conditions.

Carbon emissions reduction is the common, if not dominant, metric organizations use to demonstrate sustainability progress within corporate reporting. Collecting data to support these metrics and verifiably showing progress represent distinct pain points broadly. This will only increase — the thirst for power by AI-ready infrastructure is widely acknowledged to be a key challenge in GenAI adoption.

An additional sustainability challenge is product circularity, inclusive of product design, reuse, and cascading, and end-of-life processing and recycling. Manufacturers and end customer organizations alike need to fundamentally shift mindsets from a linear product build/use/discard supply chain to execution of a circular supply chain that facilitates product reuse, cascading, and component/material recapture. This is a huge shift that represents an expanded market opportunity at many points in the supply chain, including in the ability of organizations to capture the residual value of assets.

The Challenges of Tech Refresh: Innovations that Strategically Use Existing Infrastructure

IDC sees a key imperative for CIOs: Do not let the residual value of existing assets get lost in the shuffle as you enable the next wave of innovation. The AI pivot is not only about new infrastructure: Existing infrastructure is an important part of the budget equation. A strategic approach to cascade existing assets to new uses can help achieve business and sustainability goals, as measured by economic impact (money saved) and CO2 emissions reductions.

Sustainability goals will continue to drive circular strategies for IT assets. IDC's Global Sustainability Readiness Index of August 2023 showed that 49% of organizations globally have designated executive ownership of sustainability-related KPIs and include those KPIs in the compensation package. Circular management of the supply chain includes the following capabilities: material separation, parts harvesting, refurbishment, remarketing (resell), redeployment, and asset life extension. When it comes to IT equipment, certified data sanitization is a critical capability to fulfill essential security requirements for circular strategies.

Today's newly procured assets will, within six years on average, become the assets that need to be refreshed. This is why organizations are considering circular economy imperatives with all new IT asset investments, including PCs and datacenter infrastructure.

A Holistic Approach: Circularity and Asset Life-Cycle Strategies that Span the Business

For many organizations, the first step is to establish a center of excellence (COE) focused on AI-ready IT infrastructure that includes asset reuse/circularity.

- **Assess Current Capabilities:** Begin by evaluating your existing digital infrastructure to identify gaps, strengths, and areas for improvement. This should include a review of storage, compute, network connectivity, IT operations, security systems, IoT devices, PCs, notebooks, and other personal devices. To enable these assessments, organizations must have the ability to actively track and manage assets across their life cycles.
- **Establish a Circularity Strategy:** Identify where existing IT infrastructure assets can be reused/repurposed, maintained for spare parts, and/or resold to maximize budgets and/or fund new budgets. Consider how new IT infrastructure decisions impact circularity and sustainability goals. Include both financial and sustainability (CO2e) metrics and track them for continuous improvement.

IDC's *Used Equipment Market Survey* of February 2024 found that 76% of organizations include IT recycling and asset disposition within sustainability policy and initiatives. However, most enterprises continue to struggle to implement a life-cycle approach to asset management that includes planning, deployment, optimizing ongoing operations, and efficient, sustainable disposition practices to manage end of life, including reuse and recycling. For help, CIOs, CFOs, and sustainability leads are increasingly considering third-party service providers that can be more efficient and effective at achieving these multipronged IT asset management goals that include both business (financial) and sustainability (CO2e) targets.

CIOs and IT Organizations Seek Help to Optimize IT Infrastructure and Device Management

For the IT organization, a holistic asset life-cycle management strategy can be key to improving IT asset management across a diverse set of deployment targets. This covers datacenters to edge locations, and hybrid/remote employees to in-office employees. Understanding the value of assets at any point in the life cycle can uncover opportunities to retire higher-value assets for resale at the appropriate time, investing the residuals in GenAI technologies.

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IDC's *Used Equipment Market Survey* of February 2024 showed that demand for used IT equipment will remain strong, with nearly 20% of organizations expecting to increase spending on pre-owned equipment. However, the widely varying characteristics of any particular piece of equipment further underscores the need to understand the residual value of existing equipment to avoid apples to oranges problems of comparison. That said, IDC expects the value in existing assets to be a source of funding for IT leaders to leverage, if managed well.

CFOs Want to Ensure Enterprises Are Maximizing Tech Investments and GenAI Budgets

For the finance team, comprehensive IT asset life-cycle management can provide more options to acquire necessary IT infrastructure assets, which can lead to better budget utilization. Companies also benefit from a direct and transparent view into IT asset investments.

Comprehensive life-cycle management can help uncover previously undetected value in older assets that still have use. For example, PCs that once may have been sent for destruction or back to the leasing company (or other company) may now find new life within an organization. This supports the benefits of a circular economy to an organization, as it can be measured with both financial and CO2e reduction metrics.

Sustainability Teams Require Metrics, Continuous Improvement on Asset Disposition Practices

For sustainability leaders, a comprehensive approach to HAM is a critical component of ensuring circular economy practices and meeting ESG goals. The sustainability team needs to show compliance with scope 1–3 initiatives as measured by CO2e reduction metrics. This requires ongoing reporting to demonstrate progress across the enterprise.

The IT organization must ensure all hardware assets are used to the fullest extent across the life cycle. Sustainability teams must demonstrate how IT assets are being managed with respect to circularity frameworks, and in some countries, meeting regulations. This includes reuse, resell, parts and materials recycling, and eco-friendly disposal at end of life.

The Benefits of IT Asset Life-Cycle Solutions

To help address the complexity in IT asset management and sustainability challenges in the AI Everywhere era, many IT organizations are using IT asset life-cycle solutions, including HAM and ITAD services that span the life cycle of devices across the enterprise, including but not limited to:

- **Asset Management:** Includes asset tagging, asset tracking and inventory management, storage, and asset audit support
- **Project Management and Configuration for New Device/Device Upgrades:** Includes readiness assessments, scheduling and planning, imaging and/or required upgrades
- **Physical and Remote Deployment:** Device shipment and/or return logistics, as well as physical device deployment and setup
- **Ongoing System Support and Operations:** Includes call management and handling, physical break fix, system management (patching, troubleshooting, optimization), management of warranty and support extensions, and battery replacements
- **Asset Recovery and Disposal:** Includes proper handling and disposition of equipment at end of use, data destruction, and lease returns

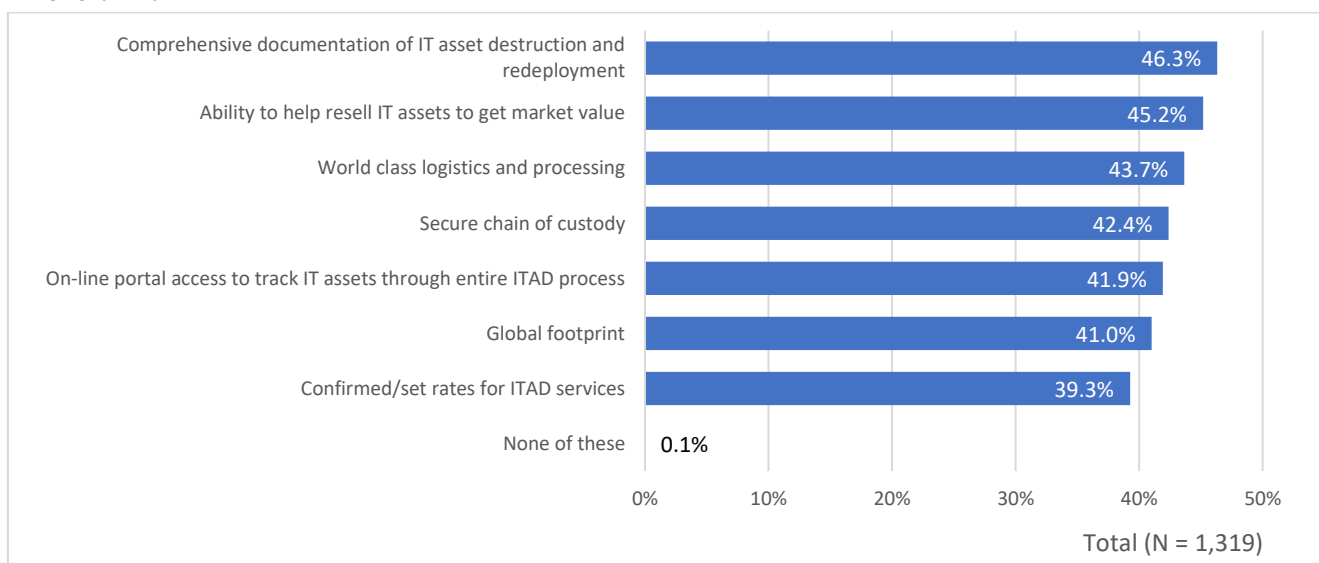
When it comes to choosing an asset life-cycle management partner, IDC research shows that organizations value the complete package (see Figure 1). Organizations are choosing partners based on a set of core competencies covering security, sustainability, financial benefit, and scale. This includes comprehensive documentation of IT asset destruction and redeployment, ability to help remarket/resell IT assets to recover market value, world class logistics and processing, global footprint, secure chain of custody, online portal access to order services and track IT assets through entire ITAD process, confirmed/set rates for services, and combined cost savings and sustainability metrics.

In the AI era, IDC believes the ability to help remarket/resell IT assets to recover market value is especially important.

FIGURE 1

Top Attributes of ITAD Partners

Q. When thinking about a secure IT asset disposition (ITAD) partner, how important are the following attributes?
Overall Rank



Source: IDC's *Used Equipment Market Survey* (February 2024); N = 1,319

Key Capabilities to Evaluate When Considering HAM and ITAD Services

When evaluating HAM and ITAD service providers, IDC recommends considering providers that can demonstrate strength in capabilities across four areas of core competency: security, sustainability, financial benefit, and scale. Table 1 provides a list of key capabilities in each of these areas.

TABLE 1

Key Capabilities to Evaluate when Considering HAM and ITAD Services

HAM and ITAD Core Competency	Key Capabilities
Security	<ul style="list-style-type: none"> • Chain of custody transparency that tracks assets from receipt to disposition for compliance and data security • Comprehensive data erasure policies to ensure data security, including issuing sanitization certificates to verify data destruction
Sustainability Metrics	<ul style="list-style-type: none"> • Robust metrics and reporting of CO2e reduction to continually track efforts to comply with sustainability goals • Consultative guidance on best practices to extend asset life when possible, as well as providing options to maximize asset value (including recycling options)
Financial Benefit	<ul style="list-style-type: none"> • Provision of asset valuation at any point in the life cycle (i.e., understanding of residual values), including recommendations for decommissioning assets that have value to be reinvested in GenAI technologies • Spare parts programs to extend the life and use of end-user devices and datacenter infrastructure, including repeatable reclaiming parts processes available for all infrastructure/device types needed
Scale	<ul style="list-style-type: none"> • Delivery and support for HAM and ITAD processes, locally and globally, with a focus on best practices and industry-specific capabilities when appropriate • A comprehensive services portfolio, with the flexibility to select the correct level of HAM and ITAD services for the organization • Refined IT asset management practices, including processes that consider the integrations between key internal stakeholders (i.e., HR and IT for employee device management)

Source: IDC, 2024

Fundamentally, CIOs will want to ensure the HAM and ITAD service provider can be a partner in understanding the value of assets at any point in the life cycle, helping to inform timely decisions on decommissioning assets that can help fund investment in other initiatives (e.g., GenAI).

CIOs should not allow the residual value of existing assets to get lost in the shuffle as they enable the next wave of innovation. The AI pivot is not just about new infrastructure. Existing infrastructure is an important part of the budget equation. A strategic approach to cascade existing assets to new uses can help organizations achieve business and sustainability goals.

Iron Mountain IT Asset Life-Cycle Management

Iron Mountain offers a full suite of IT asset life-cycle management capabilities across HAM and ITAD services for both end-user devices and datacenter assets. Customers can establish a custom ongoing program with these capabilities or support one-time projects that are local or global in scale. Iron Mountain HAM and ITAD services include a comprehensive approach to commissioning, deployment, and retirement of technology assets.

Iron Mountain HAM and ITAD services feature the following capabilities:

End-User Device HAM and ITAD Services

- Asset storage
- Asset configuration
- Asset deployment
- Asset support
- Media destruction
- IT asset remarketing
- eWaste recycling

Datacenter ITAD and Decommissioning Services

- Data destruction
- Decommissioning
- Packing
- Transportation and shipping
- Asset processing and value recovery

Future Outlook

In the AI Everywhere era, IDC believes CIOs will benefit from a renewed focus on HAM and ITAD providers as strategic partners. They will be critical to enabling strategic technology refreshes and cascading, helping to open budget for GenAI initiatives and meeting sustainability goals with verifiable metrics that arise from circularity efforts for reuse and recycling.

IDC expects that AI and GenAI will support delivering a superior customer experience in HAM and ITAD. Global, large customers already have strong demand for online portals to track IT assets throughout the ITAD process. Customers will increasingly expect further enhancements to their customer experience via GenAI-enabled features. These features will span HAM and ITAD providers, the organization itself, manufacturers, and others in the value chain to provide end customers with overall experience orchestration, driving efficiencies and business impact.

Challenges/Opportunities

IDC anticipates that Iron Mountain will have significant opportunities as it expands its HAM and ITAD capabilities in the AI era, helping customers adopt AI where sustainability is increasingly an inherent part of business practices. Organizations prioritizing the capabilities available through HAM and ITAD services want to take advantage of these partners' core competencies to ensure data security, improve operational efficiencies, and maximize IT budgets while enabling IT staff to focus on managing business outcomes rather than managing the myriad responsibilities of IT asset life-cycle management.

IDC believes Iron Mountain has the opportunity to structure offerings to help organizations that are struggling to track and report on the value of their IT assets both from a residual value and sustainability/circularity perspective, including Scope 3 greenhouse gas emissions. As discussed, understanding the value of assets at any point in the life cycle can open opportunities to decommission assets at the most advantageous time, creating value to be reinvested in the business.

Furthermore, a comprehensive approach to asset life-cycle management can lead to improvements in operational efficiencies across covered assets. Collected telemetry data from covered devices can provide detailed reporting regarding power, energy, performance, and usage, helping to inform decisions on cascading and retirement strategies.

Sustainability teams can use circularity data from asset recycling, parts harvesting, reuse/cascading, and remarketing to meet corporate sustainability goals. Overall, IDC believes sustainability reporting will rapidly become a key priority for many organizations, as governments are beginning to require sustainability details for potential tax incentives or to avoid financial penalties for noncompliance.

At the same time, IDC expects Iron Mountain to face several market challenges as it expands its HAM and ITAD offerings. Although there are many benefits associated with asset life-cycle management, service providers often face resistance to any changes in procurement and budgeting. Iron Mountain will need to continue to focus efforts on providing data on residual values, cost savings, ROI, carbon emissions, and other sustainability/circularity metrics.

Iron Mountain will also need to help customers navigate the tricky balance of expiration dates for support and maintenance contracts. Many customers will value bridge financing and transition programs for asset refresh and cascading. IDC believes a renewed focus on alleviating technical debt and offering trade-ins for older equipment can help address budget hurdles, especially in the AI era, and will drive customers to more quickly adopt HAM and ITAD services.

Conclusion

The shift toward GenAI necessitates significant investments in IT infrastructure, including AI-specific hardware and AI-enabled PCs, to support the deployment of GenAI workloads across cloud, on premises, colocation datacenters, and edge locations, with a particular emphasis on controlling data and IP. IT asset life-cycle management, emphasizing sustainability and product circularity, is becoming crucial for organizations to manage IT infrastructure portfolios, balance IT equipment refresh with value extraction from existing assets, and meet sustainability goals through circular economy practices.

IT asset life-cycle management strategies, including HAM and ITAD services, are essential for optimizing IT asset management, maximizing technology investments, and funding GenAI initiatives. By focusing on the security, sustainability, financial optimization (residual value), and scalability capabilities of HAM and ITAD partners, CIOs, CFOs, and chief sustainability officers can help drive value across business and sustainability objectives.

MESSAGE FROM THE SPONSOR

Iron Mountain Incorporated (NYSE: IRM) is a global leader in storage, asset life-cycle management, and information management services with 70+ years of experience serving more than 90% of the Fortune 1,000 and 225,000 companies worldwide. Iron Mountain's asset life-cycle management business, offering a full range of IT asset disposition (ITAD) and hardware asset management (HAM) services, empowers a circular economy integrating sustainable, efficient, innovative, and secure solutions for managing IT assets from deployment to maintenance to end of use. For more information on asset life-cycle management services from Iron Mountain, visit www.ironmountain.com/ALM

About the Analyst

Lara Greden, Research Director



Lara Greden leads IDC's worldwide research on IT infrastructure as-a-service (IaaS) solutions, flexible consumption models, leasing markets, and circular economy sustainability strategies. Her analysis provides insight from both a supply side and a buyer's point of view, with core research coverage including circular economy and sustainability for IT assets and the evolution of procurement strategies for better operating models from purchasing, leasing, and financing to as-a-service models.

Elaina Stergiades, Research Director



Elaina Stergiades is a Research Director in the IT Service Strategies for Proactive Customer Success program at IDC. She provides insight and analysis of industry trends and market strategies for technology vendors, offering customer success, deploy, and support services across a variety of deployment models. Elaina's research includes analyzing the evolution of customer success capabilities across technology providers, examining advanced predictive and prescriptive technologies in support, and understanding how digital business models are changing the delivery of these services across the IT environment.

Rob Brothers, Program Vice President



Rob Brothers is a Program Vice President for IDC's Datacenter and Support Services program, as well as a regular contributor to the Infrastructure Services and Financial Strategies Programs. He focuses on worldwide support and deployment services for hardware and software and provides expert insight and intelligence on how enterprises should address key areas for datacenter transformation and edge deployment and management strategies.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets.

With more than 1,300 analysts worldwide, IDC offers global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries. IDC's analysis and insight helps IT professionals, business executives, and the investment community to make fact-based technology decisions and to achieve their key business objectives.

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