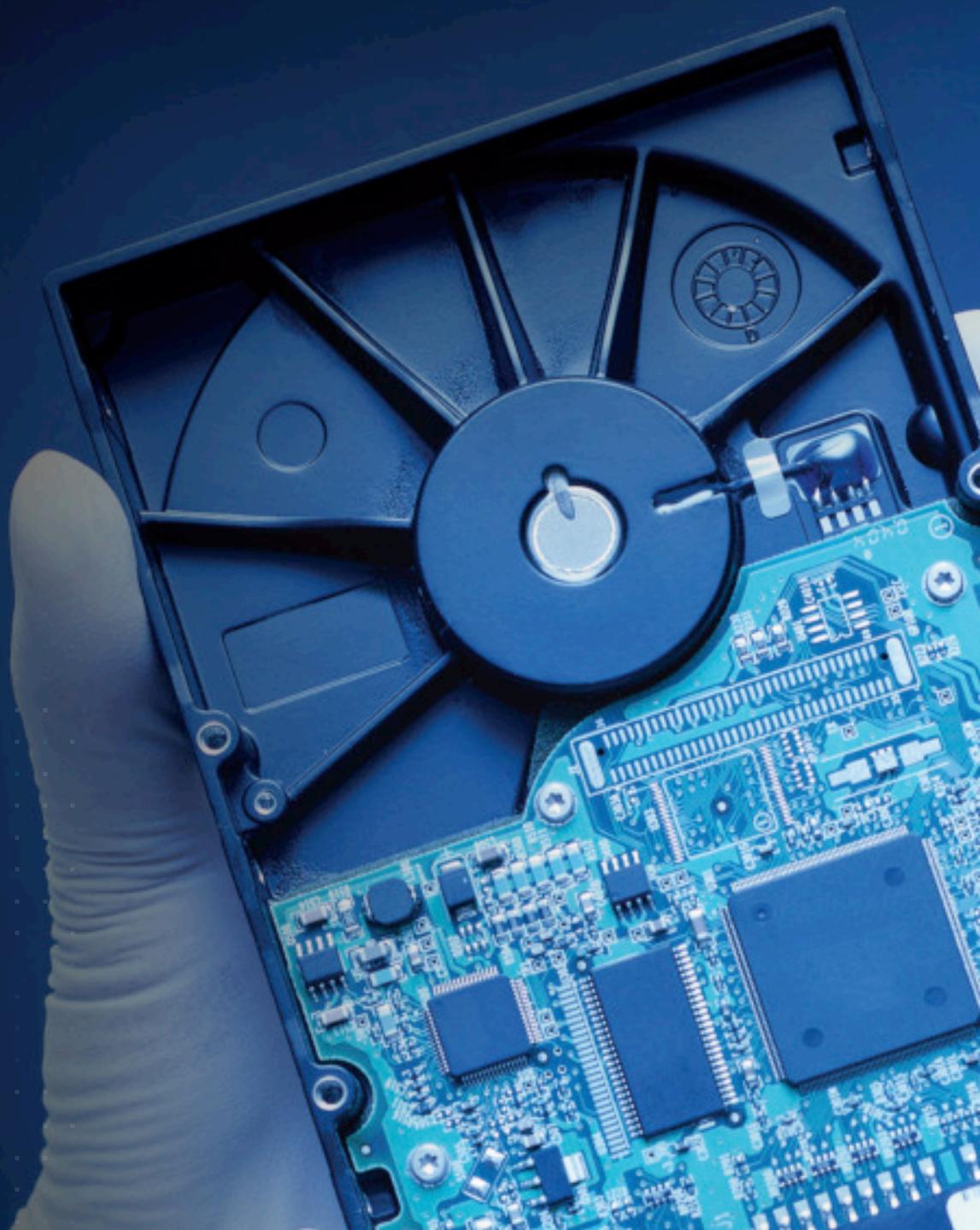




# Hyperscale Decommissioning Best Practices Report

How to securely and efficiently decommission data center assets and achieve maximum value recovery



# Repurpose without risk



## How to get the most from your still-valuable hyperscale data center assets

For hyperscalers, expert decommissioning is a must. Remaining a leader in technology innovation and efficiency means **frequently refreshing both hardware and infrastructure, even as complexity and variety of those refreshes continue to grow.**

Additional storage is required to keep pace with exponential data growth, whereas heavier workloads and the latest applications – such as artificial intelligence (AI), machine learning (ML) and edge computing – drive soaring demand for compute power.

Decommissioning at this scale creates new business imperatives, not the least of which is to **decommission hard drives securely and effectively.** This practice is mission-critical at hyperscale data centers, which process and store sensitive data belonging to billions of people, businesses and governments around the world.

The rising incidence of data breaches and increased data-theft risks compounds the need for rigorous security measures, including those implemented at the end of the hardware lifecycle. Therefore, stringent data sanitization is fundamental to the decommissioning process. When executed correctly, it unlocks massive untapped value in hyperscale hardware and infrastructure after the assets' initial lifecycle and primary market use.

To unlock that potential, hyperscalers must employ a new approach to hardware lifecycle planning and management – from design to decommissioning to redeployment and reuse. Full racks can be reused and redeployed externally. Millions of pounds of gear can be kept out of the waste stream. That's circular data center thinking. And it's how hyperscalers can optimize the value of their assets and the total cost of ownership (TCO) for their entire data center operations.

## Find out how the right decommissioning process can help you meet these objectives:



**Transform** existing data center infrastructure into a circular model to meet evolving market and computing demands.



**Adopt** an efficient decommissioning process that eliminates data-exposure risk and minimizes data center downtime.



**Anticipate** tightening data security regulations and exceed compliance requirements.



**Optimize** the TCO of hardware to maximize financial returns.

# Trends and challenges

## Growing need for hyperscale efficiency

The digital transformation of global enterprises is massive and is fundamentally altering the information technology (IT) landscape, in no small part for two reasons:

1. **The global ocean of big data is expected to swell** from 33 zettabytes (ZB) in 2018 to 175ZB by 2025.<sup>2</sup>
2. **Advanced technologies, including AI**, augmented reality (AR) and Internet of Things (IoT) devices, are **driving demand for increased compute**.

The volume of calculations needed to be a leader in AI tasks, like language understanding, game playing and common-sense reasoning, has soared an estimated

# 300,000 times in the last six years.<sup>3</sup>

The concentration of hardware infrastructure within hyperscale service providers has forced those companies to bear the overwhelming majority of this rapid growth. Data volumes and computing power are projected to accelerate rapidly, challenging hyperscalers with even more complex operations, as well as the need to quickly grow their infrastructure and **operate with greater efficiency than ever before**.

**Hyperscalers must continuously push the boundaries of efficiency, including during the decommissioning process.** Being forced

to refresh equipment more quickly requires end-of-lifecycle planning to be more strategic and holistic so that hyperscalers can successfully navigate the tension between high-velocity infrastructure, lifetime value and sustainability.

**Many hyperscalers could repurpose hardware to unlock the value of older equipment that may be worth millions – via internal redeployment, reuse by primary-market buyers or resale in secondary markets – yet most do not.** It is time to adopt and enable a circular economy model instead of discarding hardware. To accomplish this goal and capitalize on the financial opportunity, however, **hyperscalers must first protect sensitive information through decommissioning processes that guarantee data has been properly removed from every asset.**

## What's at stake during decommissioning?

Data breaches cause immeasurable damage to brand reputation, as well as potential legal and regulatory penalties and fines.

**Hyperscalers must ensure assets are fully and securely decommissioned.**

# \$401M

Estimated cost of a mega breach in 2021<sup>4</sup>



The average total cost of a data breach is highest in the United States.

# The hyperscalers' how-to guide



## 5 best practices to ensure fully secure decommissioning – and uncover hidden revenue

Data center operators must find expert partners to help them keep ahead of these trends and to mitigate the risks.

There's a range of data center decommissioning services available to fit any organization's budget. However, elite firms guarantee the elimination of data-exposure risk and create new revenue with hardware decommissioning and remarketing when they:



**Sanitize** all hardware by fully wiping data.



**Rigorously track** assets to provide a complete chain of custody.



**Identify** drives that cannot be wiped and destroy them onsite.



**Customize** logistics to make decommissioning efficient and effective.



**Create** new markets and expand existing ones in ways that maximize hardware value and increase sustainability.

Keep reading for more in-depth detail on these 5 best practices.



Solve all of your hardware decommissioning needs when you partner with an expert firm that adopts the following five key best practices:

### 1. Tap into the power of agent-based architecture.

A sanitization platform with **agent-based architecture** can wipe an unlimited number of drives concurrently, enabling unlimited scalability, from the largest data center to the smallest edge computing site.

### 2. Rely on rigorous asset tracking to guarantee compliance.

A **fully traceable chain of custody** for each serialized asset, from wiping to final disposition, ensures compliance with all regulatory standards.

### 3. Wipe drives onsite beyond forensic recovery before shipping offsite.

- Use a sanitization software that passes Test Level 2 of the Asset Disposal and Information Security Alliance (ADISA) Threat Matrix utilized onsite wipes solid-state drives (SSDs) and hard disk drives (HDDs) **beyond forensic recovery**. It is paramount that no shred of data is readable or recoverable on any wiped drive.
  - Eliminate the data-security risk of shipping drives with data on them when you wipe drives onsite.
- Track and document every step that each serialized asset takes, from wiping to final disposition (shredding or remanufacturing of wiped assets for resale).

### 4. Avoid disruptions with customized and efficient logistics.

- Decommissioning should begin with a complete audit of your equipment, your site and your goals, and entail tracking of every asset each step of the way.
- A full decommissioning process includes wiping, de-installation, collection, removal before onsite or offsite shredding, or other certified disposition of assets according to each hyperscaler's unique requirements.
- Complete **wiping of all hardware in one to two days**.
  - Clear data from more than 98 percent of the drives.
  - Securely and efficiently shred the remaining 2 percent of drives that cannot be wiped.
- Securely ship assets to be shredded, recycled or recertified, using sealed loads and GPS tracking so you know where your assets are at all times.
- No matter the number of assets, finish the entire decommissioning process in five to seven days.

### 5. Maximize the lifetime value of data center hardware.

- Choose a decommissioning partner who can help you manage all your hardware decommissioning needs holistically, as well as **optimize the TCO of your assets to realize significant value recovery**.
- Decommissioned assets should be put through a thorough reconditioning process that includes a detailed evaluation of hardware performance, the completion of any needed cosmetic upgrades and the secure packaging of the hardware into a retail-grade final product.
- Access new markets with a partner who leverages global relationships and seamlessly manages the remarketing of equipment across numerous secondary market ecosystems.

# How to pick an expert decommissioning partner

Questions to ask decommissioning firms before hiring them



## What percentage of drives are fully wiped?

- Many contractors are able to clear data only from about 50 percent of drives. In contrast, high-performance decommissioning partners clear data from more than 98 percent of drives.
  - These partners securely and efficiently shred the remaining 2 percent of drives that cannot be wiped.
- Complete wiping improves data security, audit compliance and decommissioning efficiency.
- The more drives you are able to fully wipe, the bigger the opportunity to reduce the TCO of your hardware by redeploying data center assets or selling them to secondary markets.

## Has data ever been discovered on a wiped drive?

- Testing at independent forensic labs should find no data on any kind of drive that a contractor's client has had decommissioned, from HDDs to flash-based drives such as SATA, SAS, PCIe and NVMe.

## How many layers of asset reconciliation does the vendor provide?

- Decommissioning should begin with complete asset discovery, comparing your list of stated assets with what your decommissioning partner actually finds – including the parent-child relationship between the rack, server and drive, constructing a perfect blueprint of the assets to be decommissioned.
- Throughout the decommissioning process, the partner should build several reconciliation stage-gates to ensure proper accounting of all assets, particularly at critical junctures. At these stage-gates, the partner compares the assets that have just been wiped or are moving to the next stage of the decommissioning process to the list of expected items.
- Reconciliations of actual assets and expected assets should be run automatically, creating a variance analysis. This evaluation ensures that any variances are identified, researched and closed out before further action is taken.
- To meet regulatory compliance, a vendor must ensure a fully traceable audit trail for each serialized asset, from wiping to final disposition.



### **What types of shredding are used to destroy drives that cannot be fully wiped? How do you transport and track assets to be shredded offsite?**

- Shredding can be performed on-premises using mobile shred trucks with shredders and generators attached. Alternatively, drives can be transported to the decommissioning partner's processing facility.
  - In either case, drives should be shredded to the right size to ensure no data is recoverable.
- Make sure you'll know where your assets are every step of the way.

### **How long does full decommissioning take?**

- Look for a partner who offers a turnkey solution, optimizing decommissioning processes and logistics.
- Experts who use software with an agent-based architecture enable the parallelization of tasks and unlimited scalability.
- The most efficient partners can complete full decommissioning services about 10 times faster than the competition, no matter how large or varied your data center footprint is.

### **How does the decommissioning firm maximize the lifetime value of hyperscale data center assets?**

- A partner with global sales operations, remanufacturing capabilities, product design and development expertise typically already has established relationships with key end-user buyers. Such connections enable the seamless flow of equipment across the ecosystem – opening and serving a multitude of secondary markets.
- Advanced analytics and global orchestration software facilitate learning and delivery at scale to create a circular data center that helps you generate new financial value and optimize the TCO of your assets.
- The right decommissioning partner is able to create pathways for equipment that span both internal use – offering cost avoidance – and multiple secondary markets corresponding to different form factors, product solutions and vertical segments.



# The next step

## Don't pick a vendor.

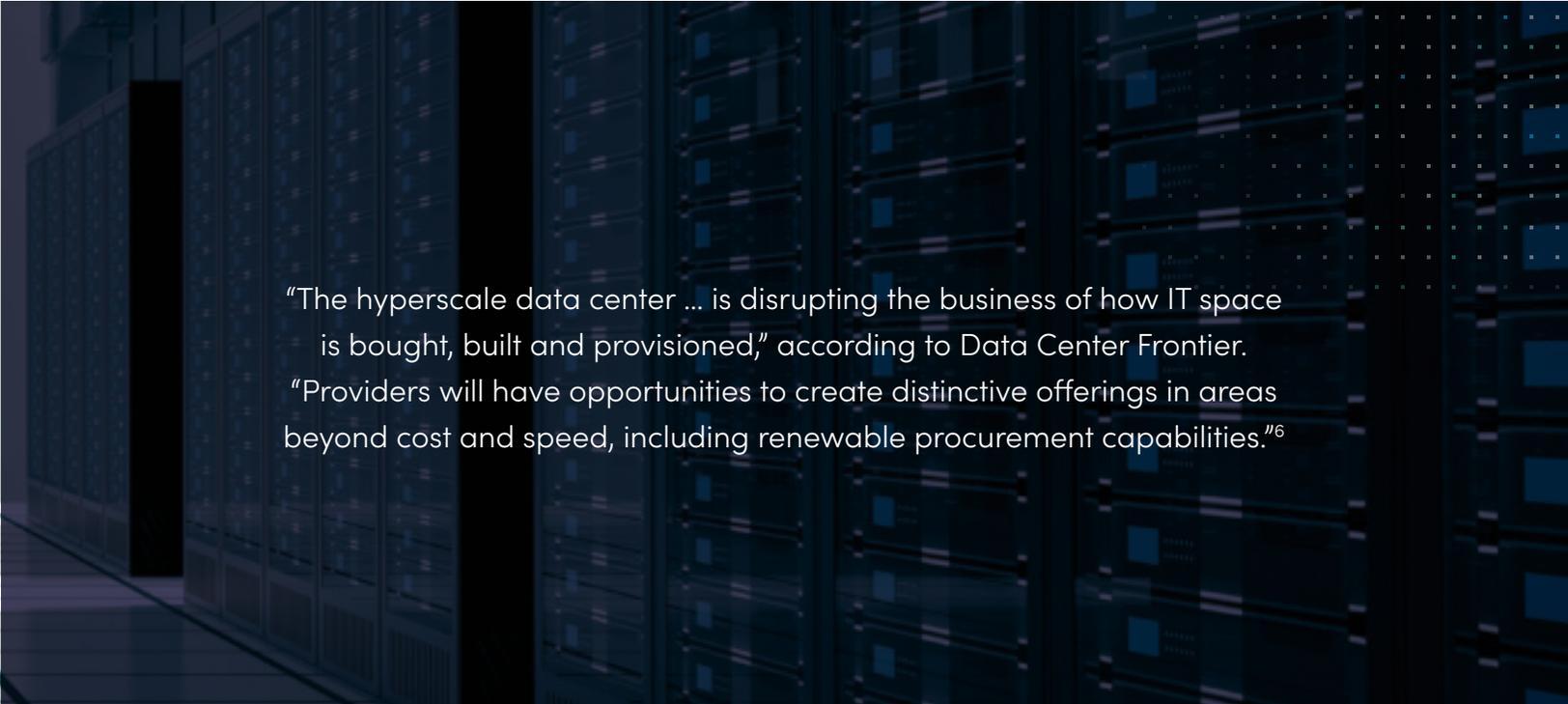
### Select the right decommissioning partner.

Yesterday's models for managing hardware lifecycles don't work for today's or tomorrow's hyperscalers.

These enterprises can design the future by partnering with **industry experts who can evaluate their decommissioning needs and provide a highly secure and efficient process** for sanitizing hardware and certifying disposition of assets while minimizing data center disruption. Elite decommissioning firms offer customized solutions for global organizations, no matter how large or varied their data center footprint might be. From owned sites to colocation

facilities, edge computing systems and even single racks in small points of presence, these **high-performance firms provide the one-stop solutions that hyperscalers need.**

Data center operators also are called upon to improve the sustainability of their enterprises' massive investment in hyper-scale facilities. Optimization can be accomplished by efficiently and securely reconfiguring full systems or components for reuse by the hyperscalers or selling fully wiped hardware in secondary markets. Circular data centers are the root of the global circular IT hardware industry, valued at \$4.5 trillion today.<sup>5</sup> **With the right partner, hyperscalers gain access to new opportunities and financial growth while delivering maximum sustainability.**



"The hyperscale data center ... is disrupting the business of how IT space is bought, built and provisioned," according to Data Center Frontier. "Providers will have opportunities to create distinctive offerings in areas beyond cost and speed, including renewable procurement capabilities."<sup>6</sup>

## ABOUT ITRENEW

# We are data center evolutionists

ITRenew partners with hyperscalers to evolve the circular data center ecosystem and unlock its true value. We maximize financial return for our clients, enhance environmental sustainability for the industry and bring access to market opportunities around the world.

**Ready to eliminate risk and maximize financial return?**

**CONTACT US**

### Sources

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<sup>2</sup> David Reinsel, John Gantz and John Rydning, "The Digitization of the World From Edge to Core," IDC, November 2018, <https://www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf> (accessed September 10, 2019).

<sup>3</sup> Steve Lohr, "At Tech's Leading Edge, Worry About A Concentration Of Power," NYTimes.com, September 26, 2019, <https://www.nytimes.com/2019/09/26/technology/ai-computer-expense.html> (accessed October 16, 2019).

<sup>4</sup> IBM Security, "The Cost of a Data Breach Report," 2021, pg. 6 <https://www.ibm.com/security/data-breach>

<sup>5</sup> ITRenew internal data, 2019.

<sup>6</sup> Rich Miller, "Hyperscale Data Centers," Data Center Frontier, 2019, <https://datacenterfrontier.com/white-paper/hyperscale-data-centers-special-report/> (accessed September 9, 2019).