

SOLUTIONS FOR GLOBAL DATA CENTER DECOMMISSIONING

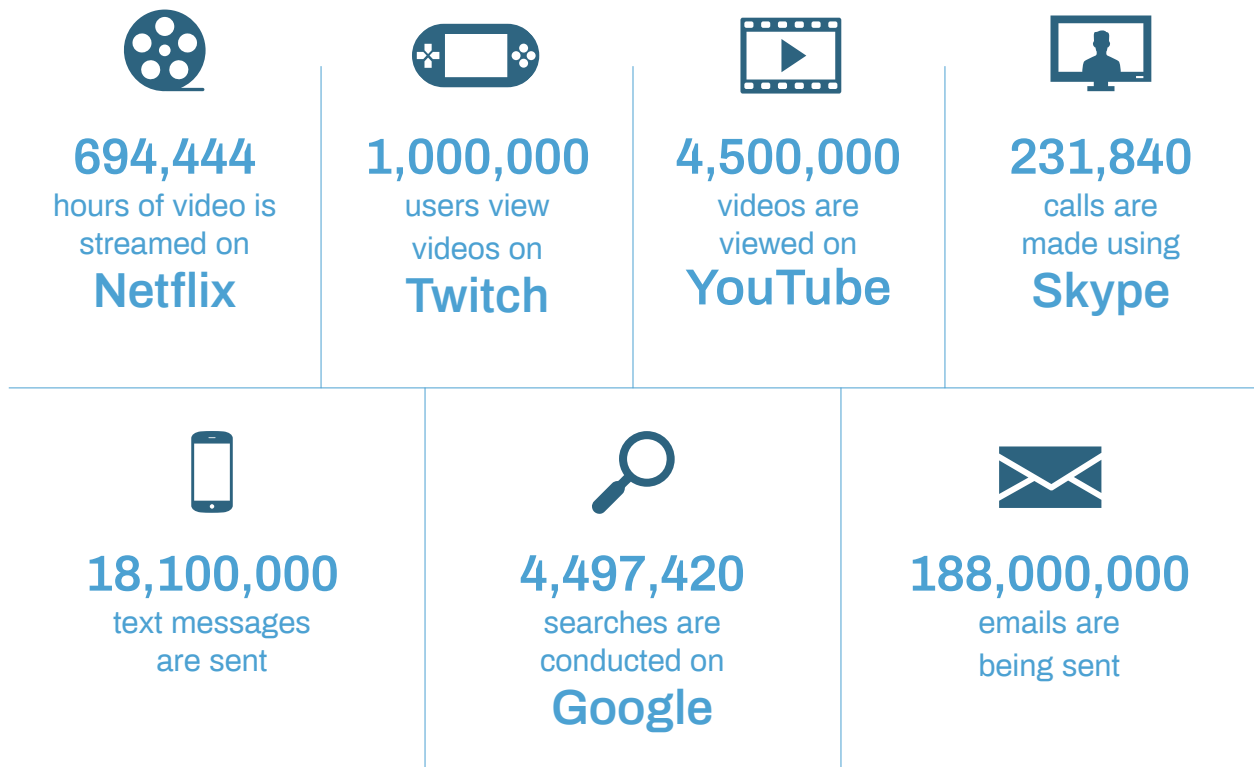
WHITE PAPER



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We are and will continue to see more data centers spread out in different regions of the world, which can make it difficult for global companies to maintain, upgrade and dispose of data center equipment.

However, to break down just how much data is being generated, every 60 seconds:



Source: DOMO "Data Never Sleeps 7.0"

Forbes estimated the amount of data being generated each day to be [2.5 quintillion bytes](#). These numbers are staggering, and only projected to grow. In fact, worldwide server shipments [grew 14 percent](#) year over year to just over 3.4 million units in 4Q19.

An evolving industry

As we emerge into a culture with more users in need of more capacity and stricter data privacy laws, corporate data centers as we once knew them, are transitioning. Where previously many enterprises managed their data center operations in-house, they are seeing more benefits in storing data in the cloud.

In fact Gartner* predicts that by "2025, 80 percent of enterprises will have shut down their traditional data center, versus the 10 percent today."

The need for constant innovation

Considering this high operational demand for data and media storage devices, it is not surprising that servers are generally replaced every 3-5 years, if not sooner. If an organization is operating their own data center, data center upgrades might stem from the desire to:

- **Improve climate control** – Data centers can be assessed for climate control based on air ventilation, circulation, moisture, temperature, and more. Adjusting to the best settings can ensure stable performance. [Chiller-free cooling](#) is the latest cooling technology on the market that decreases air temperatures by using naturally cool air or water. This is supposed to help with power consumption and operational costs. Other methods such as [underwater data centers](#) have been explored as well.
- **Save energy** – Newer servers are usually more energy efficient than the older replaced equipment, which will usually contribute to overall energy conservation.
- **Maximize processing power** – newer equipment on the market often offers improved processing power when compared to previous models.
- **Create more efficient operational layouts** – Data center layouts can be adjusted and coordinated so equipment with the same power, space and cooling ratios can be placed alongside each other. This could then trigger equipment upgrades or installations of newer cooling mechanisms.
- **Accommodate edge computing initiatives** – This new concept of micro-modular (edge) data centers are containerized solutions for data centers to manage specific needs at various locations. This solution can help increase speed connections, by bringing servers closer to end users.

New innovations = Upgraded equipment

Innovations are necessary in this fast-paced tech environment. However they cause data center managers to be faced with new challenges as they try to keep up with geographic and regulatory considerations, while ensuring global business demands are met. These considerations often lead Data Center Managers to upgrade equipment before it has reached its end of life.

With limited data center operating space, there is no room for unused items to remain in the facility. Therefore, data center decommissioning is an important part of managing a data center. Those with strong decommissioning programs can maximize the return value of their devices, ensure all replaced equipment is removed, and ensure secure and responsible disposition.

Managing data center decommissioning globally

In developed countries, such as the United States and Europe, there has been a reduction in data center growth in the last few years. Where the real growth in data centers has been, is in developing countries. There is currently a focus on the APAC and Middle East regions toward deployment of new facilities for colocation providers.

Separately, the global micro-modular data center market is expected to grow at a CAGR of 22.3 percent through 2028, according to [Future Market Insights](#). These containerized data centers will become popular in larger markets in North America, APAC (including China and Japan) and Western Europe. We are and will continue to see more data centers spread out in different regions of the world, which can make it difficult for global companies to maintain, upgrade and dispose of data center equipment.

This large geographical spread of facilities impacts data center decommissioning programs in the following ways:

- **Vendor management** – No one company manages all data center decommissioning services globally without using at least some partners. Therefore it is important to consider these two areas:
 1. Finding a vendor who can manage most of their data center decommissioning services through owned and operated facilities.
 2. Ensuring the vendor has a robust structure in place for auditing and managing multiple subcontractors and partners.
- **Reporting** – Data Center Managers tend to request customized reporting from each vendor to consolidate and have a better understanding of individual site reports as they relate to overall global reports.
- **Security** – When managing any level of data, security is always a concern. Most data centers will utilize on-site data destruction services for their sites to ensure data is removed prior to equipment being transported from their facility.
- **Value** – Often when selling used equipment, you might get more value for an item by selling it in a different market. Experienced resellers will have a strong grasp of market values in different regions and should be able to advise companies on how and where they can sell their equipment for more. Data center managers should review resale performance regularly and discuss results with the vendor to ensure satisfaction with turnover of equipment and pricing mechanisms.

While data center decommissioning will be impacted similarly when being managed on a global scale, options for specific decommissioning services will vary based on the type of data center being serviced, layout of the facility, and the level of detail required.

Main Decommissioning Options

(for different types of data centers)

Most data center work in the industry involves services that vary based on the data center and the client's requests and requirements. Here is a breakdown of decommissioning options that are generally used.

Corporate Data Centers

Corporate data centers, for the most part, will be in decline over the next few years. The focus for these facilities, as it relates to data center decommissioning, will typically be based on managing the permanent shut down of these sites as they transition to the cloud.

General Decommissioning Options

Decommissioning/Shut Down of Stand-Alone Corporate Data Centers

- Removal of all racked equipment and cabinets
- Decommissioning of servers
- Removal of cabling
- Physical inventory count of equipment, and documentation of any discrepancies in original list provided
- Destruction of data (either on-site or at a processing facility)
- Stage, pack and ship equipment as designated:
 - Move equipment to a facility where assets are prepared for resale or recycling
 - Redeploy IT assets and server racks to another company owned property
 - Return end-of-lease equipment

Hyperscale Data Centers

As demand increases these mega data centers are built with the infrastructure needed to meet the heavy expectations of internet-dependent businesses today. These data centers are built with thousands of servers that operate together through a high-speed network. They are set up to be “scaled” out easily either by increasing the number of machines working in the network, or adding additional power to them when needed.

Routine data center services will involve periodic decommissioning as updated original design manufacturer (ODM) servers and IT equipment are integrated into their technology. As they seek better performance, equipment and cost efficiencies, decommissioning will become a bigger part of their process.

General Decommissioning Options

Staged Decommissioning of Older Units

- Periodic decommissioning of racks and servers
- On-site removal and destruction of hard drives
- Inventory reconciliation with client supplied list (servers and hard drives)
- Resale and recycling services for servers and networking equipment
- Recycling services for server racks and computer parts

Other Specific Data Center Projects

Colocated (Colo) Data Centers

Colocated data centers can offer rented space for organizations to use for data hosting and storage. A colocation, also referred to as a “colo” will usually provide the data center infrastructure for clients. This includes the real estate, power, climate control, bandwidth and security. This multi-tenant data center option is usually a more cost-effective option for businesses rather than managing this in-house.

Edge Data Centers (Micro-Modular Data Center)

Edge data centers are small data centers set up near where computing power is needed, typically near population centers or where data is being generated and used. Carriers and service providers are using these to bring their data centers closer to consumers to help speed up storage, processing and analysis of data nearby. This helps drive better performance, response times and innovation.

General Decommissioning Options

- Cage cleanouts at colocated facilities
- Edge or micro-modular data center (MMDC) decommissioning

Decommissioning program management (in six phases)

While each data center will create a general program or plan that is best fit for their requirements, in general the process might involve the following six main phases.



Project Phase 1: Site Audit

Prior to the vendor performing any decommissioning work on-site, there is a great deal of preparation that must take place. Preparation might include:

On-site audit

The vendor should go on-site in advance to be able to provide an accurate evaluation of the project. The team will go in to understand the complexity of the project, the location of the assets, and the type of equipment in need to disposition services.

Asset inventory list

If the data center manages an updated asset inventory list, ideally mapped by grid, coordinate, software, hardware, etc. the vendor can map out their job and provide a more accurate estimate of how long the project will take.

Security clearance

There are often several access restrictions to enter data center facilities, many which include registration and fingerprint identification. Setting this up in advance, or working with a vendor who already has access can help speed up the process on day one of the project.



Project Phase 2: Physical Decommissioning

This phase involves the vendor going on-site and physically removing servers and hard drives from data center racks. Devices will be disconnected and de-installed, and further services and specifics depend on the request of the data center.

Equipment removed might include:

- Outdated equipment – Servers, SANs, network gear, firewalls, routers
- Ancillary equipment – Docking stations, UPS, keyboards, mice
- Obsolete equipment and supplies – Transformers, circuit breakers, test equipment, reels of cable, spare telco parts
- Tape libraries and jukeboxes
- And de-installation of racks, rail kits, power cords, cabinets

If legacy cables are present and no longer being used, some decommissioning projects can identify and remove these items.



Project Phase 3: Asset List Reconciliation

If a data center manager is able to provide a detailed asset list in advance, the decommissioning vendor can track down the location of each asset and perform a serial number comparison with automated list updates. This process can ensure all IT assets and data center equipment is accounted for, which is important for financial and legal recordkeeping. If discrepancies are identified, data center managers should confirm they are resolved and the inventory list updated, prior to asset removal.

Leased equipment

If a data center leases equipment, there are services available that can help simplify returns of equipment and prevent chargebacks. This might include repair, refurbishment, asset-tag removal (if the data center applied them), data erasure, packing, and shipping of leased devices back to the leasing company.



Project Phase 4: Data Destruction

Some data center managers choose to manage this part of the service in-house to have more control over ensuring the destruction of data. Otherwise they can outsource the wiping and data erasure, or can have stations setup in designated and secured locations.

Hard drive shredding/wiping

A few organizations have tried managing hard drive shredding in-house, however most back out when considering health, safety and environmental risks, in addition to the costs, energy

and maintenance required. On-site services have been a popular choice for data center managers who want to have the benefit of hard drives being wiped and physically shredded on-site, with certificates of destruction in-hand before equipment is transported off-site.

Many resellers who offer on-site data destruction as a service end up subcontracting the on-site work. They will usually offer clients great prices and then pay another vendor to handle the decommissioning. Once they receive the IT assets, they resell 60 percent of the equipment and scrap the rest. Companies who can manage an end-to-end service will generally be a safer, low-risk option in comparison.



Project Phase 5: Reuse, Remarketing and/or Recycling

The next phase would be what to do with the items once the data is destroyed and the items are removed from the site. All assets should be triaged to where the vendor first looks to reuse any items.

Some data centers like to offer replaced IT equipment for internal reuse and redeploy the item for use in another department. If there is no internal need or desire for equipment, it can be resold in the open market to maximize the value and usually return that value back to the data center.

Finally for parts not suitable for reuse or remarketing, recycling should take place to capture the commodity value of the material and ensure environmental compliance. Recyclers should provide certificates of recycling and every IT asset should be tracked from beginning to end using some sort of [online portal](#), accessible to the client.



Project Phase 6: Reporting

Once resold, recycled or redeployed, reporting helps provide a chain of custody for the final disposition of all assets. If you need to write the assets off, or report the disposition of the assets internally or externally, robust reporting on a serial number level should be required all over the world. Data Center Managers should have the ability to view real-time reports through a portal, which might include certificates of data destruction, certificates of recycling and certificates of sustainability.

The Results

Our digital infrastructure will continue to evolve to keep up with supporting and enabling new and upcoming business initiatives such as artificial intelligence (AI), the internet of things (IoT), software as a service (SaaS), server-less computing and more. The data center industry as a whole, is **predicted to double** by 2021 and in parallel will be the need for data center decommissioning services.

Ultimately it would always be easier working with one vendor all over the world. However most global companies in need of comprehensive data center services will need to use 2-3 vendors to do the work. Under these circumstances, it is helpful to find vendors with consistent pricing. While the structure of the relationship can be different with different vendors, finding a uniform pricing model will help. It is recommended to rationalize logistics to reduce costs where possible, so clients usually will try to find qualified vendors with sites located near theirs.

Attributes of strong vendors might include data center decommissioning services that offer:

- Comprehensive capabilities (i.e. decommissioning, inventory reconciliation, data destruction, reuse and recycling)
- Certifications for security and compliance standards
- Good reporting
- Strong buyer network and expertise in resale (i.e. e-commerce, bulk sales, specialized buyers, global network, pricing analytics, parts harvesting)

Having a better understanding of global data center decommissioning services will help provide assurance of security, compliance and environmental responsibility. There is a long list of benefits associated with responsible decommissioning of data center equipment. Some of these include the obvious: Ensuring data security, business continuity, compliance, and maximizing the revenue returned to the client.

SLS Benefits

Our all-encompassing services which include decommissioning, data security (on-site services), resale and recycling offer clients the following benefits:

- **Convenience:** SLS can manage data center decommissioning projects from beginning to end. Using a single vendor to manage removal and disposition of data center equipment simplifies administrative headaches.
- **Confidence:** The SLS team provides clients with assurance of data destruction and inventory accuracy.
- **Maximum Returned Value:** Our network of buyers and experienced remarketing team has a proven resale program that is able to return the best price for each item.
**It is also important to note that SLS can resell ODM devices that were contracted or manufactured for companies specifically. Hard drives can be removed and first either destroyed or wiped for data destruction. If clients prefer to manage data wiping or destruction in-house, SLS can still manage the remaining hardware.*
- **End-of-Life Recycling:** A benefit of using SLS for data center decommissioning is we can manage the entire project from beginning to end. Often the end-of-life recycling for data center hardware tends to be outsourced, opening up the door for increased environmental liability risks. SLS is proud to be a leader in the recycling industry and contribute toward creating a circular economy for electronics.
- **Sustainability:** When reusing and recycling data center and electronic equipment, there is a decrease in demand for resources used to produce new products.
- **Global Expertise:** SLS sells equipment globally, allowing us to sell to the right market at the right price. Because transboundary movement of IT equipment is governed by local regulations there are different specifications to be aware of. Our teams of global service center managers and compliance experts helps consult and guide clients to ensure compliance and efficiency.

If you have any questions, or want more information on global data center decommissioning, **contact Sims Lifecycle Services today.**

*Gartner, "The Data Center is Dead, and Digital Infrastructures Emerge," April 13, 2018.



Contact Us:

www.simslifecycle.com/contact