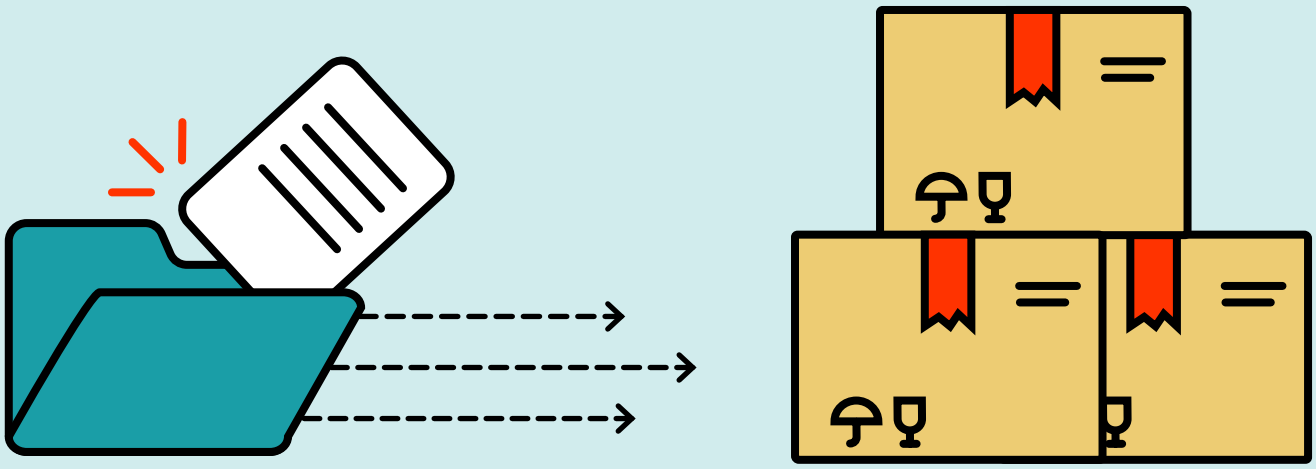


Thinking About Sustainability? Think About Your Storage

Some 86 percent of program managers say they can't reach their sustainability goals without significantly reducing their technology infrastructure's energy use, according to research from Pure Storage, which specializes in advanced data storage technology.

With federal agencies looking to better respond to environmental concerns, data storage is an area ripe with potential savings. For example, flash storage ...

- Consumes approximately 90% less electricity to store the same amount of data, versus conventional disk storage
- Shrinks the data center footprint, allowing agencies to decommission the vast majority of racks now used for storage
- Supports digital transformation with solutions that are simple, secure and scalable in support of ever-growing data storage needs

This report, developed in collaboration with Pure Storage, explains how agencies can take advantage of flash storage to achieve their sustainability goals.

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Forces Driving Change

A number of key challenges are forcing federal IT leaders to rethink the data center, and the energy demands of data storage in particular.

- **Sustainability mandates:** The Federal Sustainability Plan calls for net-zero emissions from overall federal operations by 2050, including a 65% emissions reduction by 2030. This challenges agencies to revamp their data centers, which can use 100 to 200 times as much energy as a commercial building, according to the Government Accountability Office.
- **Opacity:** In looking to reduce data center energy use, agencies may struggle with a lack of insight. IT teams typically don't track consumption down to the granular level, and therefore may not realize how much data storage is impacting their sustainability efforts.
- **Complacency:** Data centers work, and a "good enough" mentality sometimes arises. But as expectations around sustainability and energy efficiency grow, that complacency can stymie change.

Flash Offers a Way Forward

Storage is key to data-center sustainability. "Low power consumption of storage devices, which are components of the data center itself, is critical in reducing power consumption," according to the IT professional association IEEE.

A move to flash storage can help agencies meet their goals. Flash-based solutions ...

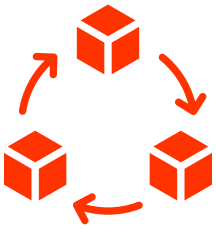
- **Use less energy:** A flash array uses as much energy (in watts) as a toaster, compared with legacy storage that uses as much power as two clothes dryers. With no moving parts, flash generates no heat, and thus reduces dramatically the need for cooling systems.
- **Reduce the data center footprint:** A smaller form factor means that flash takes up significantly less physical space than disk storage. This, in turn, supports sustainability, allowing agencies to scale down their overall data center operations.
- **Support digital transformation:** Flash supports overall efforts to modernize the IT ecosystem, which speeds adoption of unstructured workflows, containerization and other key elements of digital transformation.

"In the past, people weren't necessarily looking at how much power, space and cooling went into a data center. Now the paradigm has shifted."

"With flash, the form factor is smaller, there's less weight, less power and cooling. Everything is more efficient."

– Seth Kindley, Pure Storage Principal Data Architect for U.S. Public Sector

Best Practices in Modernizing Storage



Look for a Vendor With a Diversified Supply Chain

The pandemic brought to the fore the importance of having a robust IT supply chain. "We have all been made painfully aware of the fact that it's hard to get chips and component parts," said Seth Kindley, Pure Storage Principal Data Architect for U.S. Public Sector. "You want to work with a vendor that has a diversified supply chain."

There are multiple places where a vendor can source materials, and it makes sense to work with a partner that casts its net wide enough to ensure resilience, he said.

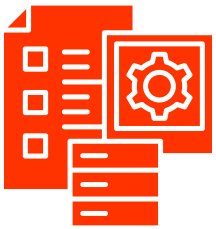


Look for a Solution Ecosystem

A storage solution should do more than just store data. "Does it meet your needs around disaster recovery and restore? You have to look at it holistically," Kindley said.

That means evaluating not just the hardware but also the software stack, which ought to be matured and proven. And it should be a fully realized solution. "Do you have to develop your own pieces to tie this infrastructure together, or do you get all the data services without having to either pay for them separately or develop them yourself?" Kindley said.

Agencies will want to look for a fully realized solution — one that is easy to implement, simple to operate and inherently secure.



Look for Integrated Solutions

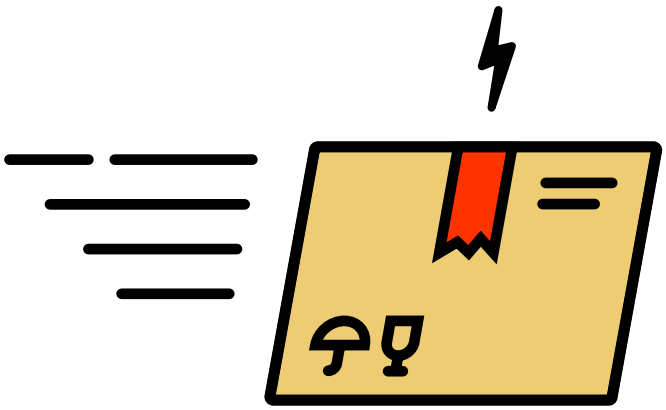
In evaluating their options, federal IT leaders want to consider the ecosystem surrounding a data-storage solution. That means finding a vendor whose support team comprises U.S. citizens on U.S. soil. It means looking for solutions that have a presence on GitHub and that make available relevant documentation.

"It's the hardware, it's the software — and then it's the support of the system. You can't have a real, functional solution without all three of those being in lockstep," Kindley said.

How a Civilian Agency Reduced Its Storage Footprint

How might a government agency best use flash storage? In the case of one federal civilian agency ...

- **The challenge:** The agency was looking to reduce by a third the power needed to heat and cool its primary data center. Without funding to build new centers, it needed to shift toward a more efficient infrastructure. A baseline assessment showed that row by row, rack by rack, machine by machine, enterprise storage at scale was among the largest energy draws.
- **The solution:** The agency implemented an all-flash solution from Pure Storage, leveraging nonvolatile memory express (NVMe) for high throughput. This included FlashArray//X software-driven storage optimized for enterprise requirements and FlashArray//C, a quad-level cell solution delivering high performance and hyper-consolidation.
- **Outcomes:** With flash, the agency replaced six racks of conventional disk storage with 18 rack-units — less than half a rack. In terms of power consumption, the agency reduced its usage by over 100 kilowatts. It achieved the same logical capacity in a greatly reduced physical footprint, which further reduced the power and cooling draw.



"By shrinking that footprint both logically and physically, they freed up over a thousand kWh, which is substantive."

– Seth Kindley, Pure Storage Principal Data Architect for U.S. Public Sector

How Pure Storage Helps

Pure Storage is redefining the storage experience, simplifying how people consume and interact with data while supporting transformation to a smaller carbon footprint. Leveraging a diversified supply chain, it offers inclusive data services that combine hardware, software and support. The company's focus on the public sector user community ensures data integrity.

To learn more, visit www.purestorage.com/

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