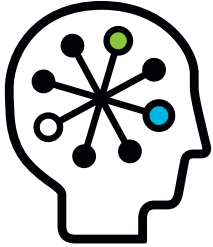


Energy-efficient storage solutions

Go green while managing your agency's exponential storage growth



At a glance

HP LeftHand P4000 SANs help government agencies manage exponential storage growth while minimizing the use of energy:

- On-demand scalability combined with thin provisioning lets you purchase—and power—only the storage you're actually using.
- HP LeftHand P4000 Virtual SAN Appliance Software rescues stranded server-based storage, creating a SAN out of existing resources and power budgets.
- Capitalize on the energy-efficiency improvements seen in industry-standard platforms—years before they appear in traditional SANs.

Going green and increasing energy efficiency was, in the past, simply a matter of virtue. Today, however, it's a business necessity, especially for government organizations facing exponential data growth and skyrocketing energy costs.

Congressional budgets don't increase automatically to compensate for higher energy costs, so agencies like yours must find ways to do more with less energy. HP LeftHand P4000 SAN technologies can help. Built from the ground up to be energy efficient, P4000 SANs help you do more with a limited energy budget.

Deploy only what you need

Every storage product is ultimately constrained by the energy costs of its hard disk storage. P4000 SANs use energy-efficient, high-performance SAS drives, reducing typical power consumption per drive from the 18.8 watts a Fibre Channel drive uses to the 17.4 watts a SAS drive uses. These differences add up over a large number of drives to a significant savings. A strategy of spinning only the drives you need will deliver even greater efficiency.

Purchasing a traditional SAN means determining your current and future storage requirements, adding a reserve for snapshots, and deploying all the storage you'll need now and into the future. P4000 SANs are designed to scale both performance and capacity on demand, letting you purchase and power only what you need today—and grow your SAN later, as you need more storage. Scaling a P4000 SAN is instant, non-disruptive, and transparent to applications.

HP LeftHand P4000 SANs make intelligent use of your storage. Thin provisioning is a built-in, no-cost feature that allows logical volumes, snapshots, remote copies, and volume clones to allocate only the storage they

actually use. You increase storage utilization while having to buy less equipment, which lets you avoid capital costs, energy costs, and the use of valuable data center space. The thin provisioning feature uses allocate-on-write technology, which means there's no need to provision storage for volumes that may take years to fill up, or reserve storage for snapshots whose lifetime may be very short. And sophisticated management tools provide ample warning of when you need to scale your SAN.

Press server-based storage into use

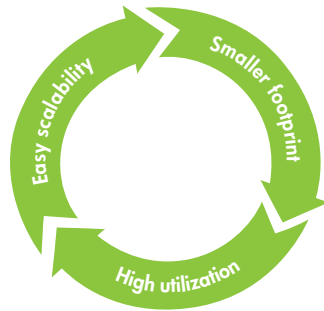
Many agencies purchase large numbers of servers with standard configurations. This eases management and makes servers interchangeable, increasing flexibility. These servers often have large amounts of internal storage that burns energy without contributing any value.

In virtualized environments, a typical server uses a single built-in drive to boot the virtualization software, while disk images for its virtual machines are stored on a SAN. The HP LeftHand P4000 Virtual SAN Appliance (P4000 VSA™) Software is a VMware virtual machine that rescues stranded, server-based storage and makes it HP iSCSI SAN storage. It leverages the capital outlay you've already made, uses the energy that's already being consumed, and provides a shared SAN for only the cost of the software.

Stay ahead of the curve

P4000 SANs use industry-standard, enterprise-class hardware platforms that offer the latest in energy-efficient technology. While technology refresh occurs with traditional, purpose-built SANs on a typical 24- to 36-month cycle, HP LeftHand SANs put you on a more competitive, fast-moving 9- to 12-month refresh cycle.

Figure: HP LeftHand P4000 SANs are easily scaled, deliver higher storage utilization, and occupy a smaller energy and data center footprint.



HP LeftHand SANs also offer these green advantages:

- Disk technology improvements increase energy efficiency by storing more while using the same number of watts.
- Energy-saving multi-core processors from Intel® improve performance by 80 percent and reduce power consumption by 30 percent.
- Platform-level energy-efficiency improvements such as variable-speed fans and high-efficiency power supplies are all on the fast track with industry-standard platforms.

P4000 SANs use iSCSI technology, eliminating the need for energy-consuming Fibre Channel HBAs on each server and the purpose-built switch gear to support a traditional SAN. Every server has a direct, switched connection to its storage over standard IP networks that organizations know how to manage.

Staying ahead with HP LeftHand P4000 SANs

P4000 SANs add more intelligence and energy efficiency into the use of storage—resulting in cost avoidance and energy savings. They help you increase energy efficiency because you need fewer disk spindles to provide the same amount of storage as traditional SANs. This enables you to avoid the

capital cost and environmental impact of purchasing more equipment than you actually need, reducing overall power consumption along the way.

This provisioning combined with on-demand scalability helps raise storage utilization and reduce the amount of equipment that you need to purchase and power. Our P4000 VSA lets you do more with resources you already have by rescuing unused storage on servers and making existing servers part of a P4000 SAN. With intelligent storage such as this, combined with the energy efficiency of the platforms on which they are based, P4000 SANs are a choice that will help you stay ahead.

HP Services

Partner with HP Technology Services to boost availability and avoid costly downtime by mitigating technology-related business risks. To help take the worry out of deploying, supporting, and managing your HP LeftHand SAN solution, we've designed a portfolio of service options that are as flexible, scalable, and affordable as our storage.

For more information, talk with your HP sales representative or HP-authorized Channel Partner, or visit: www.hp.com/hps/storage

HP Financial Services

HP Financial Services provides innovative financing and financial asset management programs to help customers cost-effectively acquire, manage, and ultimately retire their HP solutions. For more information on these services, please contact your HP representative or visit

www.hp.com/go/hpfinancialservices

For more information

To learn more about HP LeftHand P4000 SANs, ask your HP representative or visit www.hp.com/go/p4000

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