



Spend less on all-flash storage

HPE Store More Guarantee for HPE 3PAR

HPE 3PAR compaction technologies change the economics of flash and help you get the most out of your system's flash capacity while improving flash media endurance.

Store more data per raw terabyte with HPE compared to the competition.¹ Get more for less with better overall efficiency. We've backed this up with guaranteed compaction ratios for your workloads. It's as simple as that.

Everyone's data is a little different

Want to know more on the impact of HPE 3PAR Storage data compaction technologies in your environment?

Find out how HPE 3PAR All-Flash Arrays can simplify your storage and workload environment while reducing the cost and footprint of flash with an assessment and report.³ The report highlights inefficiencies and ways to better utilize your current infrastructure, regardless of what equipment you're using today.

Assessments are optional and not required to participate in the HPE Store More Guarantee program. Contact your HPE sales or channel partner representative for more information.

While flash is fast and has accelerated the transformation of the modern enterprise, it's more expensive than spinning disks. On your journey to the flash-driven data center, it only makes sense to make sure your flash storage offers superior capacity and efficiency. With the HPE Store More Guarantee, you can be confident that you'll get the most from your flash investment. If you're not satisfied with the storage efficiency for your workloads on your new HPE 3PAR All-Flash system, we will work to make you happy. For example, Hewlett Packard Enterprise will resolve issues and provide expertise related to data compaction or deliver additional storage, if needed.²

HPE 3PAR Storage is ultra-efficient flash storage that dramatically changes the economics of flash and delivers a radically simple user experience for the enterprise. Deep integration with hardware-accelerated compaction technologies automatically work to provide a complete solution with maximum efficiency to reduce the high cost and footprint of flash.

Designed for mixed-workload environments, HPE 3PAR compaction technologies are always-inline for peak efficiency without performance penalties. This not only increases the endurance of flash but also achieves consistent performance by not requiring resource-intensive post-process

tasks. In addition, running compaction in line provides predictable savings as data is loaded into your system and prevents running out of space due to deferred processing. Delivering storage efficiency without sacrificing the HPE 3PAR flash performance is available and affordable for every workload.

HPE 3PAR Storage delivers advanced compaction capabilities

Zero Detect

Zero Detect reduces the amount of capacity required to store data without affecting performance because operations are driven by one of the many dedicated engines built into the HPE 3PAR ASIC. Zero Detect examines incoming write streams, identifies extended strings of zeros, and removes them—preventing unnecessary data from ever being written to storage. As a result, the duplicated data does not consume capacity on the array.

Deduplication

Like Zero Detect, deduplication on the HPE 3PAR Storage array uses the HPE 3PAR ASIC and is designed to reduce the amount of capacity needed to store data by reducing the amount of data

¹ Based on HPE analysis of publicly available data, conducted in February 2019; Internal testing carried out in December 2018.

² Provided the additional storage does not cause the total storage of the HPE 3PAR array purchased to exceed its maximum capacity.

³ No conditions or restrictions apply for this assessment and report.



Solution brief

actually being written to storage. However, unlike Zero Detect, the system is looking for data that is more complex and to avoid duplicating data that has already been written to storage.

Compression

While Zero Detect and deduplication both reduce the amount of flash required to store data by helping eliminate unnecessary data, compression works by looking inside data streams for opportunities to reduce the overall size of the data set. HPE 3PAR ASIC plays an indirect role by offloading other resource-intensive operations from the CPUs, thus freeing them up to perform compression operations.

Why is HPE 3PAR so confident?

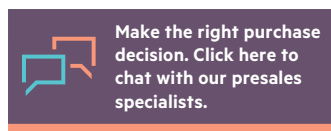
HPE 3PAR Storage set a new standard for total system efficiency that not only reduces the cost of flash but also extends flash media endurance.

For example, with HPE 3PAR compaction, the average customer data compaction ratios by application are:⁴

Application	Data compaction ratio
Virtual desktop infrastructure (VDI)	3.75–9.0X
Virtual server environments	2.25–3.75X
Databases	3.0–3.75X

⁴ Based on HPE internal study, the average data compaction savings per workload is derived from HPE 3PAR Storage telemetry data at the time of publication. HPE Store More Guarantee may be available for other workloads with a storage assessment. The data compaction ratios shown do not include HPE 3PAR snapshots. If snapshots are used, the data compaction ratio ranges will be higher. Contact your HPE sales or channel partner representative for more information.

⁵ Based on HPE analysis of publicly available data, conducted in February 2019; Internal testing carried out in December 2018.



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Data Packing

Data Packing combines data reduction and flash-efficiency technologies to maintain peak capacity efficiency over time. Data Packing takes random-sized pages (the result of the data being deduplicated and compressed) and packs them into small, fixed-size pages. This allows the system to attain a higher total system efficiency as compared to other all-flash platforms and improves endurance, as written data doesn't cross multiple internal pages, resulting in very efficient use of flash pages. Due to the superior efficiency gained through Data Packing, HPE 3PAR Storage arrays offer one of the highest raw to effective ratios among major all-flash arrays while maintaining high levels of performance.⁵

Thin technologies

HPE 3PAR has long been considered the gold standard for hardware-accelerated thin technologies that do not require pre-planning or up-front space reservations. HPE 3PAR Thin Provisioning leverages the system's dedicate-on-write capabilities to improve storage utilization dramatically, allowing customers to purchase only the disk capacity they actually need, when they actually need it.

With Thin Conversion, a technology refresh does not require terabyte-for-terabyte replacement. Instead, it offers the opportunity to help eliminate a significant amount of legacy capacity through fat-to-thin conversion made possible by leveraging the zero-detection and inline deduplication capabilities within the HPE 3PAR ASIC.

With HPE 3PAR Thin Persistence and Thin Copy Reclamation, the capacity remains thin by reclaiming allocated but unused space at a granular level.

Virtual Copy

Virtual Copies are the HPE 3PAR snapshot implementation used to provide a point-in-time Virtual Copy of data in order to share and protect data for almost any application simply and affordably. HPE 3PAR Virtual Copy is thin, nonduplicative, and reservationless.

The combination of these compaction technologies is key to reducing the cost of flash and making it an economical choice for nearly any application.

HPE Store More Guarantee for HPE 3PAR

- This guarantee applies to new HPE 3PAR All-Flash Array purchases (no POC or demo units) until December 31, 2019.
- HPE 3PAR array must be sized and priced on the basis of HPE 3PAR Adaptive Data Compaction technologies by Hewlett Packard Enterprise or an authorized channel partner.
- HPE 3PAR array must run HPE 3PAR OS version 3.3.1 (or higher) with active deduplication and compression.
- Compression or encryption may not occur outside HPE 3PAR array. For example, data may not be compressed at the application layer or encrypted at the host or switch.
- Any workloads that include noncompressible data (such as, audio and video files) are not eligible.
- The customer must migrate a significant portion of their data to the HPE 3PAR array in order to see statistically accurate data reduction (for instance, migrating a single VM will show less deduplication than migrating 10 VMs).
- HPE 3PAR array must be installed while following the **HPE 3PAR StoreServ Storage best practices guide** and data reduction technologies set up following the **HPE 3PAR Adaptive Data Reduction technical white paper**. These best practices include but are not limited to placing data types in the right performance policy (such as, SQL data in the SQL policy).
- HPE 3PAR systems must be configured for remote connectivity and send telemetry data to **HPE InfoSight**.
- This guarantee is valid for a 180-day period, which starts from the time HPE 3PAR array arrives at the customer site.
- The customer must work with Hewlett Packard Enterprise on good-faith remediation.

Learn more at
hpe.com/us/en/storage/3par.html