# Opinion Paper
## HPE Flash Storage

## Six Ways Flash Storage is Making On-Premise Cool Again

There's lots to love about the public cloud: incredible innovation, generally well-regarded levels of reliability and of course, the pay-as-you-use commercial model. The rise of several mega-providers and their infiltration of almost every facet of a traditional infrastructure makes it hard to ignore public cloud potential, if not its appeal. There is increasing market momentum towards public cloud and a growing acceptance of services as concerns like security are overcome. The natural inclination therefore, is to consider what services can be devolved from on-premise infrastructures. Accordingly, nothing escapes the cloud question, from critical application delivery to backup and recovery. The simplicity and predictability of the cloud is capturing the imagination of IT and business executives alike. Seemingly, running on-premise IT systems no longer has the glamour of the cloud.

### 1. Unbeatable Performance

Latency greatly effects cloud service delivery. Whilst many factors can positively influence latency, including proximity to the data centre, technology used, router hops and workload, there's no substitute for the nano-second response times from a local all-flash storage array. For business-critical applications or else those applications that are performance-dependent, the cloud simply can't measure up, especially when new all-flash innovations like NVMe (Non-Volatile Memory Host) controllers are helping to unleash more than 9 million IOPs, exposing the full potential of flash disk. Using on-premise all-flash storage, you can do more and do it faster.

### 2. Vast Scalability

Petabyte-scale all-flash arrays are becoming increasingly commonplace. Whilst not offering the conceivably limitless amounts of capacity available in the public cloud, they do offer a huge amount of headroom for growth in capacity. New consumption-based infrastructure economics which can accompany the acquisition of the technology also mean favourable commercials that feel more 'cloud-like' in their approach and offer attractive gateways into more capacity without the need to forklift upgrade underlying technology.

Importantly, all-flash storage effectively eliminates storage silos, because for the first time organisations have a storage medium capable of handling multiple different types of workload at once. The only difference will be the type of flash storage deployed: ultra-fast flash to support performance-sensitive applications, and less expensive flash storage where performance doesn't provide quite as

## On-Premise Fights Back

**Storage is a critical component to creating an agile and flexible infrastructure. Capacity demands in particular make it an ideal candidate for moving into public cloud services. However, with the advent of flash storage, and more recently all-flash arrays, interest in continuing to run on-premise architectures is having a renaissance. In this paper, we look at six reasons why it's helping to make running on-premise technology cool again.**

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much value. This ability to blend performance and capacity is an attractive combination and means that flash is no longer the media preserved for first and second tier storage.

### 3. Hands-On or Hands-Off Management

The challenge with the public cloud is that at best a significant amount of control over your data is relinquished when you chose this path. Conversely, many of the traditional storage headaches like capacity management, de-duplication and LUN mapping are condemned to the past. On-premise all-flash arrays offer the best of both worlds – the choice over 'set and forget' automation with features like self-healing and auto-tiering, or detailed business-specific instructions that capture exactly how you want your data managed or applications supported. By its very nature of being on-premise, some organisations will find valuable comfort in knowing where their data is stored and exactly how it is being handled.

### 4. Toe to Toe on Economics

The commoditisation of Solid State Disk (SSD) has resulted in modest acquisition costs for all-flash arrays and in doing so makes them much more competitive with the economics offered by the public cloud. Likewise, the levels of sophistication built into the technology delivers spin-off savings and efficiencies. For example, the high performance nature of flash means denser virtual machine implementations resulting in less physical hardware and savings on acquisition costs, real estate, power and cooling. Similarly, all-flash arrays embed technologies like deduplication and compression, which essentially squeeze more data onto fewer flash drives. As flash does not need more drives to sustain performance, having fewer drives is not an issue for an all-flash array. Thanks to the raw performance of all-flash systems, data efficiency measures can be applied with almost no noticeable penalty.
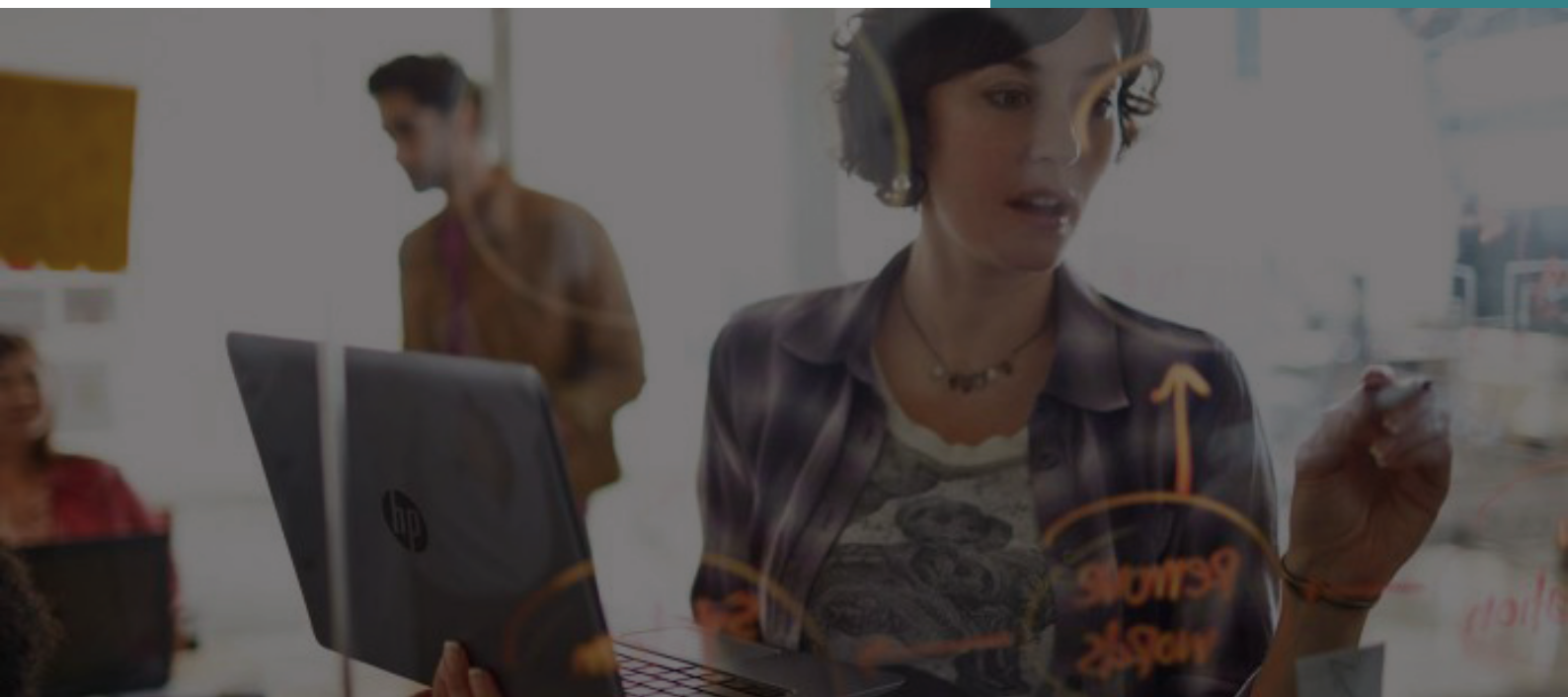
Finally, service-like commercial models escape heavy recurring capital expenditure, over-procurement of capacity and cyclical upgrades to technology, instead enabling the infrastructure to evolve with the data being stored.

### 5. Strengthening the Case for Hybrid Cloud

The performance benefits of locally deployed flash storage are hard to ignore. It's difficult to trade that away for what is most likely an inferior service available through the public cloud, especially where business-critical or active data is concerned. With the advancements seen in the technology over the last few years and the possibility of creating ever more capable infrastructures on-premise, thanks to hyper-convergence (discussed next in this document) a hybrid approach to the cloud looks set to be the route to the optimum infrastructure for most organisations.

## So what is the role of public cloud in light of the on-premise renaissance?

Ultimately, organisations want to pay as little as possible to store their data without compromising on the performance expected to retrieve and work with that data as needed. Accordingly, flash storage makes a compelling case for storing and managing active or critical data on-premise. Less critical or inactive data on the other hand could and probably should be pushed into the cloud, where the economics for long-term retention make more sense as the issue of latency is less important.

### 6. Powering Hyper-Convergence

Hyper-convergence consists of commodity servers clustered together to act as a single storage pool, with virtual machine workloads running alongside the storage as part of the cluster. The storage is almost exclusively flash. Hyper-convergence enables extraordinarily dense infrastructures to be built and flash storage is practically a necessity in order to match the performance of the compute and the demands of the applications.

Hyper-convergence packages the best architectural design elements of the public cloud and drops them into the on-premise data centre, and in doing so delivers many of the same characteristics that make public cloud services so attractive. Rapid scalability, constant availability, low-touch management, application mobility across computing environments and reduced inefficiencies in IT planning are all features of a hyper-converged infrastructure. The modular nature of the technology flattens the investment curve and ensures that units of compute, network or storage can be acquired to improve capacity or performance as needed without major overhaul.

## What now?

Discuss it - Speak to one of our resident all-flash experts to talk further about the points raised in this paper.

See it – Take a closer look at all-flash technology at one of our forthcoming events.

Test it – See it for real in your own environment with a trial of the technology.

### What to Look for When Choosing Flash Storage

All-flash storage arrays may differ on capacity, drive type, networking options and features, but the one thing they all do is improve performance – way in excess of anything that could be achieved using spinning disk.

It's difficult to evaluate what's best as the market welcomes new entrants almost daily. While choice is good, the sheer volume of options brings inevitable challenges. In the pursuit of better economics some flash platforms sacrifice features commonly found in traditional arrays, especially concerning data reduction technologies. Other considerations like warranty and support should rightfully take their place in the decision-making process. To embrace the full potential of all-flash storage, it is worth evaluating underlying platforms. There are many examples of flash media being retrofitted to ageing platforms, which whilst giving a boost in performance does not fully harness all that is possible from flash. Newer platforms are built from the ground up and are focussed exclusively on flash. They often offer better return on investment and features more suited to the cloud era, proving beneficial when there is a strong likelihood of being deployed as part of a hybrid cloud infrastructure.

The choice of storage will be driven by the applications and services it needs to support. The opportunity to consolidate applications onto smaller, leaner infrastructure as a result of flash should not be underestimated. IT has the opportunity to reduce cost and risk by introducing a more universal infrastructure that allows applications to share the same storage media. It is therefore important to properly evaluate the performance characteristics sought and any features that will assist in the better operation of those applications. This way you can ensure that the new storage platform not only delivers on the promise of performance, but reduces cost and simplifies management in the process.

HPE has the most complete line-up of all-flash storage technology of any vendor. Following the recent announcment of HPE acquiring SimpliVity, the enterprise storage family should substantially grow, allowing them to offer all-flash solutions, no matter the size of the environment or workload need. They have pioneered the development of flash technology from the very beginning, notably being first to market with solutions built on SLC, MLC and high-density TLC flash media. HPE has always set the benchmark on price, but matches this with feature-rich arrays that deliver exceptional cost per GB and attractive pay back periods. For the first time all-flash storage is within reach of every organisation.

The commitment to flash storage extends into hyper-converged infrastructure where HPE offers huge choice across software platforms thanks to partnerships including VMware, Nutanix, Pivot3 and Atlantis. Their innovation in server technology is the perfect building block for scale-out infrastructures.