



Solution Guide

THE HPE STORAGE LINE-UP EXPLAINED



WHICH STORAGE PLATFORM IS RIGHT FOR YOU?

There can be no questioning that HPE now has a formidable storage portfolio. Their product family is one of the most comprehensive available, offering huge choice in terms of both function and budget.

The line-up now consists of MSA, SimpliVity, Nimble Storage, Nimble dHCI, 3PAR, Primera and Cloud Volumes. It's a broad selection that inevitably has some overlap. If you are keen to explore the HPE storage portfolio, but are confused about where to start or what is right for you, then look no further. The following guide offers insight and opinion on where each of the key products sit.

A small caveat - this study is primarily intended for the typical enterprise organisation, apart from the odd exception, so we've focused on a few particularly relevant products. It's also worth noting that HPE's innovative infrastructure management platform, InfoSight, has been rolled out across all their solution families.



Modular Storage Array (MSA)

Raising the bar for entry storage

Expect to pay
£8,000-£30,000

Q At a glance

- Fibre-channel SAN or SAS HBAs for direct connect.
- Scalable to 345TB using SFF 10k disks.
- Delivers up to 200,000 IOPs.
- Well suited to 20-30 VM environments.

Pros

- Good level of features for price.
- Superb entry price point.
- Requires no specialist storage knowledge.

Cons

- Won't match up to heavy unpredictable mixed workloads.
- Five nines availability, not for mission critical.

Buy if...

You're looking for value-based storage, that's easy to run with some enterprise level features.

The Modular Storage Array (MSA) is one of HPE's longest serving storage products. As a fibre-channel SAN it's gone through multiple iterations over the years and been deployed more than 500,000 times by small to mid-sized businesses all over the globe. For more modest demands, the SAS direct connect is a very popular solution with customers running just a couple of servers, such as SQL databases.

It's difficult to say what a small to mid-sized business actually is, but in our experience an MSA-based solution would be well suited to organisations running 20-30 virtual servers that require shared storage, or with capacity requirements up to about 50TB. The technology has the headroom to scale to as much as 960TBs of capacity and can deliver up to 200,000 IOPs, making the MSA very good with predictable workloads. The MSA is also commonly used where sequential throughput (at which it performs very well) is required including applications for video streaming or editing.

Of course, being aimed at small to mid-sized business the family of products is well-suited to the value-conscious buyer and entry-level solutions can be bought for as little as £6000.



Again, being aimed at this end of the market, the arrays are built with simplicity in mind and are exceptionally easy to install and get operational. From this perspective they do not require any specialist storage knowledge and are perfect for the IT generalist, especially HPE ProLiant server admins. Accordingly, they're often used for small or branch office locations where there may be little to no IT resource, and systems need to simply work without intervention from skilled personnel.

Just because it's been around a while is no reflection on the MSA's capabilities or performance as a solution. Despite its remarkable price point, the MSA family comes with a surprising amount of functionality built-in including wide striping, thin provisioning, asynchronous replication and hot automated tiering - features not out of place on much more expensive storage devices. With options to load the devices with flash SSD and traditional spinning disk, there are countless configurations to see that you arrive at a solution that fits the performance you seek and your pocket.

Importantly, the MSA comes inclusive of InfoSight, and all the management software you'll need, which is licensed for the lifetime of the product. Likewise, it's well integrated with common hypervisors including those from VMware and Microsoft.

SimpliVity

More than just storage

Expect to pay
£20,000+

Q At a glance

- Hyperconverged infrastructure solution.
- Composed of compute, storage and network.
- Ready to scale to 1000s of VMs.
- Unique data virtualisation software delivers astonishing efficiencies for VMware.

Pros

- Quickly streamline IT operations.
- Opportunities to massively reduce data thanks to smart data services.
- Easy to grow and scale.

Cons

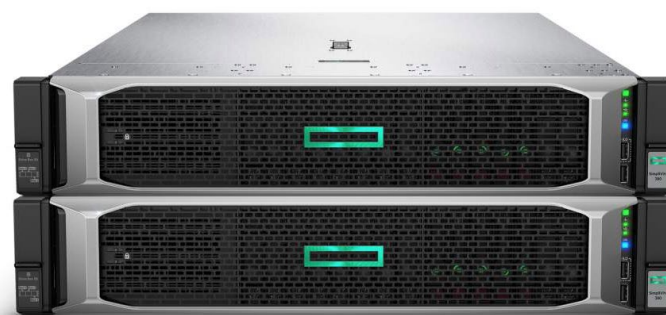
- Will most likely need to coincide with a compute and storage refresh simultaneously.
- You can't separate compute and storage - you get both in an appliance regardless of whether you need them.
- Little freedom to customise IT operations.

Buy if...

You don't want dedicated storage and don't mind trading off some flexibility for ease of use. Be willing to embrace the full capabilities of SimpliVity to eliminate your backup challenges.

A highly popular competitor amongst a range of hyperconverged solutions, SimpliVity combines compute, storage, virtualisation and network fabric into a single appliance that acts as a building block to grow your infrastructure. It presents a different take on building infrastructure, a scale-out approach that is predicated on adding appliances or nodes, as more capacity is required. There is no SAN as all storage is presented internally and the infrastructure is controlled by clever software in the SimpliVity interface and everything is heavily virtualised.

The beauty of creating infrastructure using SimpliVity is that it is outrageously simple. The software in the interface autonomously powers much of the day-to-day operations and an IT generalist can easily manage everything that's going on



through a single pane of glass, as opposed to domain experts tinkering with compute, storage and network respectively; multiple sites are managed as one global infrastructure. As such, a pretty sophisticated infrastructure can be set up with minimal expertise and in a fraction of the time.

The SimpliVity infrastructure is built on the latest HPE ProLiant servers and makes for a very powerful architecture, especially as the on-board storage is all-flash. Up to 32 nodes may be combined in a single "federation" making it ideal for all but the largest enterprise environments, at which point HPE Synergy would be more suitable.

Although not exclusively a storage platform, SimpliVity comes with an array of impressive data services that include always-on deduplication and compression across both storage and back-up sites. The result is up to 100:1 reduction in data, the ability to restore a 1TB virtual machine in less than a minute and the ability to add or replace appliances with zero downtime. HPE calls these benefits their HyperGuarantee.

The economic possibilities of building infrastructure using SimpliVity are exciting, HPE even claims that SimpliVity's TCO over 3 years rivals the cost models of adopting the public cloud.



Nimble Storage

Radically simple to buy, run and manage

Q At a glance

- Functionally rich and highly economical storage platform.
- Hybrid-flash and all-flash variants.
- Scales to 3PB, reliable and consistent performance in whatever configuration.

Pros

- Very economical, great ROI.
- Impressive uptime guarantee - six nines.
- Well-suited to all sorts of applications.
- Ability to upgrade from an entry to high-end model online, no forklift upgrades.

Cons

- Narrow set of configuration options will discourage some users.
- Some users have noted slow performing browser-based GUI.

Buy if...

- You want a new storage approach shaped by simplicity and performance at an attractive price point.
- Your needs exceed 20TB and a few dozen VMs, taking you beyond the MSA sweet spot.

The emphasis of Nimble Storage is all about simplicity - of purchasing, use and upgrading. This is an exclusively storage product that is built on a highly innovative architecture that connects over both Fibre-channel and iSCSI. Unlike many other storage products, the performance and capacity is decoupled. What this means is that the performance of the solution is dictated solely by the controller board within the appliance. The controller board is loaded with high-speed DIM memory so all host writes get sub-millisecond response times. Data is then de-staged from memory to disk at leisure and at a much lower IO rate. As the memory is so fast it almost doesn't matter what the media is at the backend. De-staging is a sequential task, which traditional spinning disk is very good at, so operating a Nimble array that is heavily composed of traditional disk versus all-flash SSD will take all but burst workloads in its stride. What this does in return is create exceptional economics - enabling users to experience amazing performance at an impressively low price point.

Expect to pay
£20,000+



Nimble comes as a hybrid-flash (HF-series) and all-flash (AF-series) family of products meaning the choices are straightforward when it comes to purchase. The big difference with the AF-series products is that data reads are also very fast. Where all-round consistent performance is a must, an all-flash array will edge it over its hybrid cousin, but for a premium in price.

Both HF-series and AF-series arrays are managed in the same way and are generally considered very easy to configure and run and require little skill to get operational. For example, the user is not even offered a choice of RAID level (Nimble uses triple parity RAID-6 only).

Interestingly, the Nimble Storage family uses consumer-grade SSDs in the architecture which helps drive the economics of the platform. It means the platform can very economically scale to as much as 2PBs and deliver performance of up to 300,000 IOPs. Likewise, being built as an active standby architecture, appliances are completely field-upgradable. For instance, if you bought an entry-level array and decided that the IOPs performance wasn't good enough, a controller board swap would deliver the uplift in performance you sought.

Nimble also promises a 99.9999% guaranteed availability. Using InfoSight diagnostics software, which comes complete with every product, HPE receives literally billions of performance parameters every day from the operational appliances in production for customers. Consequently, every potential issue is detected and remediated often before a customer would ever know there was a problem. Thanks to predictive analytics, it will identify combinations of hardware and software that may cause an issue and prevent updates being made to vulnerable configurations until a fix is found. Its pre-emptive fault analysis uses artificial intelligence and has been so successful that the very first Nimble Storage appliance is still live in the field having never failed.

The attributes of the Nimble Storage platform therefore make it particularly well-suited to all sorts of unpredictable workload demands like virtual desktop infrastructure and high-performance applications like databases and ERP.

3PAR StorServe

The ultimate in reliability and protection

Expect to pay
£50,000+

Q At a glance

- Scale up to a massive 80PB.
- Performance of 3.5m IOPs.
- Ready for all mission-critical workloads.

Pros

- Massive scalability.
- Predictable performance for mission-critical applications.
- 99.9999% uptime guarantee.

Cons

- Significant price tag for a serious storage proposition.
- A tier-1 data centre system, will require a Storage Admin.
- Complex versus 'set and forget' alternatives elsewhere in the portfolio.

Buy if...

- You need a full feature set and guaranteed levels of performance and reliability for mission-critical applications.
- You have some extreme applications requiring fast response times and 100,000s of IOPs.
- Capacity requirements growing into 100s of TBs or more.

3PAR is a flash-optimised datacentre-grade storage array. In HPE's family it's considered a mid-range to high-end array, but its comprehensive feature set is built for extreme high-availability and DR scenarios - ideal for cloud service providers and anyone who puts a premium on availability and protection. Accordingly, 3PAR excels at handling mixed workloads from huge numbers of virtual machines.

3PAR is philosophically different to Nimble in that it is an active-active platform, built on custom ASIC (Application Specific Integrated Circuit) hardware to deliver exceptionally high performance. This means 2, 4, 6 or 8 controller sets deployed simultaneously for resilience and options to connect over fibre-channel or iSCSI with extensive OS support.

In terms of capacity, large 3PAR devices can deliver 3.5 million



IOPs and a capacity of 24PB in a single system, 80PB in a four-system federation, perfect for consistent high-performance mixed workloads. Unlike some of the other technologies discussed, 3PAR will require specialist skills and probably dedicated administration to run and operate properly. However, the 3PAR OS does an excellent job of continually self-tuning the system and creating logical volumes, plus assigning to hosts is easy via the GUI or CLI. 3PAR has more features and functions than all of the other choices discussed and is ready for those administrators who like to customise their environment.

While this is a more serious storage proposition than most of the other technologies in the HPE storage family, the 3PAR product-line remains focused on delivering excellent economies alongside blistering performance. In particular, its Adaptive Optimisation technology uses SSD as a performance tier for hot pages and demotes cooler pages to disk. It means average response times remain low even if the appliance is not composed entirely of SSD media. For customers buying all-flash 3PAR, the Adaptive Data Reduction technology increases the effective capacity of the SSD media. Likewise, 3PAR products come with all-inclusive software licensing to drive the arrays, ensuring no unwelcomed future costs.

Just like Nimble, 3PAR also offers a 99.9999% uptime guarantee offering uninterrupted access to data and IT. It aligns 3PAR with today's modern datacentre demands and is most suited to mission-critical applications and an on-premises cloud-like storage experience.



Nimble Storage dHCI

Next level storage and compute

Expect to pay
£35,000+

Q At a glance

- Flexibility of converged infrastructure with the simplicity of hyperconverged.
- Scale compute and storage independently of one another, securing better economics and preventing wasted resources.
- All-flash configuration.

Pros

- Extends benefits of HCI and supports more application types.
- Six nines uptime guarantee - 99.9999%.
- 15 minute installation from rack to apps means accelerated time to value.
- Easy to operate, self-managing environment with all the benefits InfoSight brings.

Cons

- Solution is not node-based, so less suited to edge environments than the datacentre.
- Compute and storage packages can't be provided separately.
- Currently only integrates with a VMware hypervisor.

Buy if...

- You want the simplicity of HCI but with the flexibility to respond to unpredictable growth patterns.
- You want to be able to scale resources independently of one another.
- You want a pre-configured, ready to go solution.

HPE Nimble Storage dHCI is an industry-leading product that has spawned a whole new category of its own known as disaggregated hyperconverged infrastructure (dHCI). Disaggregated solutions go beyond the HCI experience to better support workloads with unpredictable growth. Virtualised compute and storage are uncoupled from one another, but still combined within a single solution, such that they can be scaled independently.

Described as being the full stack infrastructure that you can deploy in minutes, or the datacentre in a box, the Nimble



Storage dHCI can be up and running in just 15 minutes, providing rarely seen simplicity in virtualised environments. Nimble's InfoSight solution is inbuilt, allowing it to support infrastructure planning from day one by analysing capacity usage and drawing on data gathered from endpoints all across the globe to guide its operation. The 'set and forget' nature of Nimble means that users benefit from 85% auto-resolution of issues across its entire installed base, putting an end to routine firefighting.

Easier to run than HCI, Nimble Storage dHCI requires far less specialised skills to manage it. It also supports a wider range of applications which helps to beat the sprawl of traditional and modern apps that IT teams are tasked with managing simultaneously. For administrators whose budgets are heavily scrutinised and under strain, its scalability means that its economics are kinder on the wallet with zero wasted resources.

It's built up of all-flash storage which achieves better IO throughput and sub-millisecond latency for demanding applications. Deployment of new apps is made easier using a combination of its 'what if' simulation tool, and its intuitive recommendations for the apps that allow it to self-optimize performance.

Seamless data mobility is achieved by bursting to the cloud. Nimble Storage dHCI currently supports Google Anthos or HPE Cloud Volumes. Mission critical data is safe to store and access, with the solution achieving 99.9999% availability - something HPE guarantees with the solution. All of which is managed through VMware's vCenter platform, giving you data-centric visibility at all times.

Nimble Storage dHCI represents a modernisation opportunity for those who already have a hybrid cloud strategy in place, and those who plan to in future.

Primera

Storage with 100% guaranteed availability

Expect to pay
£50,000+

Q At a glance

- Out of the box scalable storage for mission-critical applications.
- Simple to manage, making high-end storage accessible for all.
- Accelerate all tasks and do more with less.

Pros

- Requirement for in-house management skills is reduced and tuning eliminated.
- 100% guaranteed availability.
- Users experience up to 93% time savings.

Cons

- Pricing and scale makes it principally suitable for enterprise-grade businesses.

Buy if...

- You want peace of mind that your storage solution will never fail you, and will drive optimal performance.
- Want mission critical storage without the administration and typical training burden.

HPE Primera is the Tier 0 intelligent storage solution that offers higher capacity than any other HPE storage product. While it is built on 3PAR technology, it is not designed to replace it, instead acting as a natural next-step for those who are ready to move beyond it.

Unlike 3PAR, Primera is a self-managing solution that requires minimal training to run and can be ready to deploy from first power-up in less than 20 minutes. It combines the frictionless user experience of Nimble with 3PAR's resilience, application performance and functionality. Inheriting InfoSight, Primera is highly autonomous and able to self-optimize performance enhancements. It's a huge step towards the human error-free autonomous datacentre, where InfoSight plays the role of datacentre manager.

Complex and lengthy upgrades that require professional services are eradicated. Primera upgrades are customer-led, automatic and non-disruptive, meaning that there's no forklift



upgrades, no application downtime or hidden costs in store. In minimising the resources required to manage Primera, HPE have afforded IT teams more time to innovate.

Designed for ensuring your mission-critical applications are always-on and always fast, Primera far surpasses six nines by delivering 100% availability guaranteed as standard. Yes, you read that right, it's guaranteed from the moment it's deployed. The impressive statistics don't stop there, it also delivers up to 1.5m IOPs from just one 8U system, whilst only having a modest price difference when compared with 3PAR.

Primera delivers advanced, agile hybrid cloud experiences that can support any workload at any scale. To achieve this, it integrates with both HPE Synergy and HPE Composable Rack. Unpredictable workloads become predictable to manage thanks to automated workload planning and transparent upgrades.



Cloud Volumes

Cloud storage with a difference

Expect to pay
£300+

At a glance

- No-risk cloud storage that supports enterprise applications.
- Proven uptime and six nines availability.
- Limitless scaling with no infrastructure to manage.

Pros

- Pay as you go cloud storage with no long term commitments.
- All-flash performance in the cloud.
- Millions of times more durable than native cloud block storage competitors.
- Instant snapshots and instant zero-copy clones for faster backups and Dev/Test innovation.
- Seamlessly move data between public cloud providers.

Cons

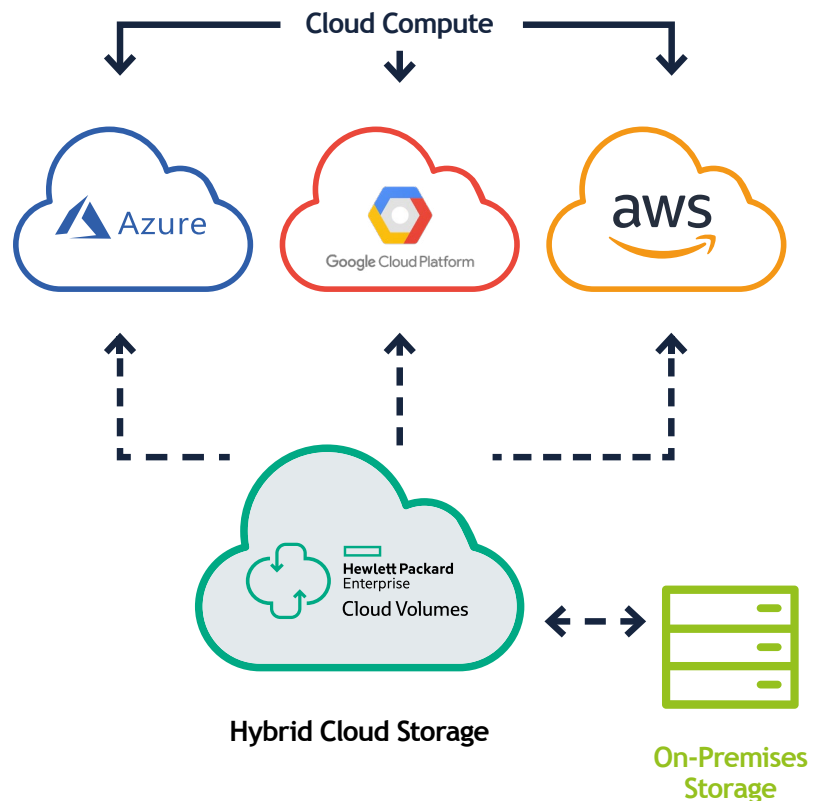
- It is seen by some as just another cloud service.
- Must be operating a V4.5 or above Nimble storage array.
- Unable to scale down before the end of your commitment period.

Buy if...

- You want the benefits of data mobility without the fear of cloud lock-in.
- You want to harness hyperscaler infrastructure-as-a-service but with the freedom to move between providers.

HPE Cloud Volumes is an intelligent cloud storage solution that replicates the reliability and performance of on-premises storage, whilst harnessing the elasticity of the cloud. Unlike other cloud storage providers, HPE enable customers to have the luxury of choice - users choose which public cloud they want to use, and can choose to swap to a different vendor at any time at no extra charge. Cloud Volumes works for AWS, Azure and Google Cloud Platform.

Data is managed using a web-based provision tool which is simple and intuitive to use. Once you've identified how much capacity and performance you need, and how long for,



the storage is instantly available to you. Cloud Volumes has terabytes of capacity available to those who need it, and its IOPs run into the tens of thousands. Nimble's InfoSight is also inbuilt into the platform, so that your data analytics can be extended into the cloud, affording you global data visibility from the datacentre to the cloud.

Understanding exactly where your data and apps perform best allows you to confidently select data destinations. InfoSight's constant data monitoring ensures that should this optimal performance location change, or if potential savings occur, you'll know about it. Cloud Volumes' flexibility allows users to rapidly move data back and forth between the public cloud and their on-premises datacentre without incurring hefty egress charges. Users are never penalised for shifting their service to a higher performing replacement.

HPE have built their datacentres as physically close as possible to the public cloud hyperscalers, as proximity reduces latency. In turn, this ensures that even the most demanding applications perform well when data resides in Cloud Volumes, without any need for refactoring. By storing your data away from the hyperscalers, you enjoy the benefits of their services, whilst better protecting your data. HPE guarantee 256-bit AES encryption for all data stored using Cloud Volumes.

CONCLUSION

It's easy to think of storage as being all about capacity and the tipping point between these various solutions being simply the amount of capacity you require. However, on this front there is considerable overlap between the products, so in choosing the storage solution that's right for you, your focus should instead turn to your priorities and desired outcomes. Whether you are looking for affordability, simplicity or availability there is a storage solution for everyone in HPE's latest generation of products.

THE NEXT STEP

Servium is a leading HPE partner in the UK. We have extensive skill and knowledge in all the storage technologies discussed in this document and are well placed to advise and guide you as you look to identify the best solution for your business.

To learn more or discuss any of the solutions in more detail, simply speak to your Account Manager, email us at hello@servium.com or call on **+44 (0)303 334 3000**.

ABOUT SERVIUM

Servium is dedicated to creating great IT experiences - we seek to win the hearts and minds of IT strategy-makers, professionals and users. Our attitude is that no challenge is too big, no detail too small. We tackle both the ordinary and the extraordinary with the same focus and originality of thought that ensures solutions make a difference. It means we're one partner ready to assemble all the technology and know-how every medium to large organisation relies on. Matched by straight-talking, real-world experience and amazing service, our customers enjoy exceptional value; the product of the best innovation, latest thinking and a thriving ecosystem of technical experts.

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