Hewlett Packard Enterprise

Redefine MySQL with software-defined storage

Infrastructure optimized for MySQL
HPE ProLiant DL380 with NVMe SSDs from Intel® deliver low-latency transactions, critical for database workloads such as MySQL based business applications. The combination enables accelerated business outcomes via a highly available infrastructure that supports up to six nines of availability[1] with highest uptime.

Manage through single pane of glass
Provides the ability to integrate management of servers, storage, and networking with a single plane of glass in VMware environment. Presents data in an easy to navigate, interpret and diagnose manner.

Dramatically reduce storage TCO
Reduce enterprise storage CAPEX using HPE ProLiant servers and Intel SSDs with vSAN architecture that supports granular scaling up to 64 nodes. Simplify, automate operations and integrate management to focus on critical initiatives enabling reduced OPEX. Achieve lower cost per VM with greater resource utilization.

Grow with your business needs
Achieve financial agility by allowing organizations to purchase capacity instead of making upfront commitments.

Tested solution elements
8 x HPE ProLiant DL380 Gen9 Servers

4 x 800 GB HPE NVMe SSDs and 16 x 1.6 TB SATA SSDs from Intel per server

2 x Intel Xeon E5-2695 v4 processors per server

MySQL Community Server 5.7.16

Sysbench 0.4.12.10

VMware vSphere® 6.0 U2

Optimized HPE All-Flash platforms for MySQL-based business critical applications

MySQL workloads of today are high performing, flexible and scalable that provide robust transactional support along with good security features in a high availability and reliable manner. HPE provides a novel approach for MySQL database workloads that support extremely fast data insertion capabilities and high performance query engines using an all-flash HPE NVMe and SATA SSDs vSAN solution.

Modern infrastructure underpinned by All-Flash software-defined storage

Database workloads are one of the most complex, resource intensive workloads that require high value solutions that reduce overall operating expenses. Flexibility of deployment is driving the rapid adoption of software-defined infrastructure. All-flash NVMe SSDs, designed for performance, reliability, endurance and serviceability help support larger data sets and deliver greater performance at a lowered total cost of ownership (TCO).

Benefits of All-flash VMware® vSAN™ with HPE ProLiant Servers:

- **Leverage proven platform**—Rapid data center deployment enabled by preconfigured systems thoroughly tested for compatibility with VMware vSAN.
- **Reduce data center footprint**—Storage and compute are now available from the same resource within the data center.
- **Grow as needed**—Modular building blocks that support rightsizing your initial deployment while also allowing for easy expansion in the future.
- **Achieve policy-based management**—Include storage for additional granularity in Service Level Agreements (SLAs).
- **Simplify infrastructure**—Integration with other VMware® technologies allows for seamless integration into existing VMware environments.

This validated framework provides a robust solution for hosting MySQL applications built on HPE ProLiant DL380 Gen9 servers powered by Intel® Xeon® processors and SSDs. With the combination of HPE and VMware, you are able to develop a high performing MySQL Server engine in a system that efficiently leverages the x86 technology and optimizes TCO.

Test results

- More than 63,000 transactions per second (TPS) cluster-wide
- 144 Virtual Machines, 18 per server, average of 440 TPS per Virtual Machine
- Virtual Machine OS disk—60 GB, Data disk—400 GB
- File size—204.8 TB of raw capacity cluster-wide, 25.6 TB raw capacity per server
- 102.4 TB usable capacity with FTT = 1
- Enterprise level scalability by adding more SSDs and more servers (up to 64)
- Architecture that enables storage and compute to run in the same physical host with minimal overhead

[1] blogs.vmware.com/virtualblocks/2016/01/15/vSAN-delivers-enterprise-level-availability/

This vSAN solution comprises of eight ProLiant DL380 Gen9 Servers using tiered storage by pooling SSDs into a shared datastore. Intel-based 800 GB Write Intensive NVMe SSDs are used for caching, and Intel-based 1.6 TB Mixed Use SATA SSDs are used for capacity. With vSAN supporting deduplication and compression along with the ability to scale up to 64 nodes it provides an excellent platform of enterprise level scalability with balanced capacity and performance.

Proven technology for the new IT evolution

HPE ProLiant DL380 Gen9 Servers

Get reliability, serviceability, and near continuous availability—all backed by a comprehensive warranty—from the data center standard for business-critical database applications. Designed to reduce costs and complexity, HPE ProLiant DL380 Gen9 Server leverages Intel Xeon E5-2600 v4 processors, along with the latest HPE DDR4 SmartMemory supporting capacity up to 3.0 TB. It also features support for 40GbE NIC with a broad range of graphics and workload accelerator options. HPE ProLiant DL380 Gen9 Servers simplify management for more cost savings, with powerful new capabilities for automating and simplifying system deployment, maintenance, and troubleshooting.

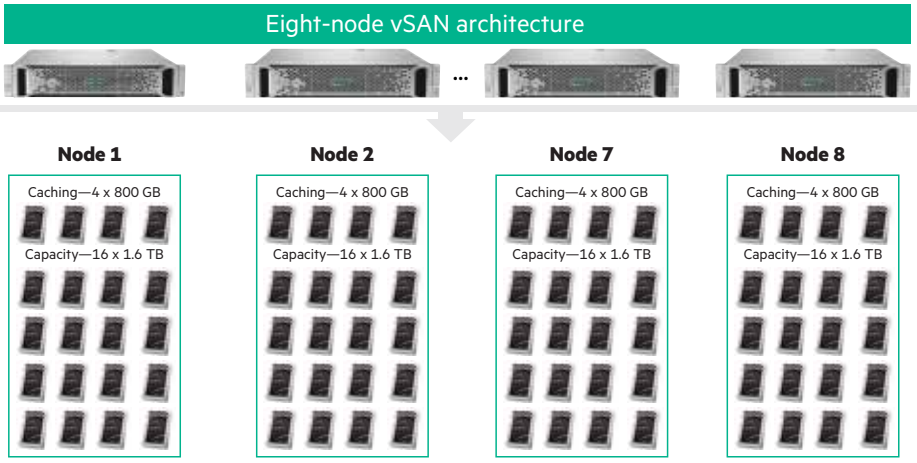

Figure 1. HPE All-Flash vSAN Solution

Partners working together for you VMware vSAN

Hewlett Packard Enterprise and VMware have been the pioneers in delivering top notch enterprise class storage. VMware vSphere delivers powerful server virtualization, high availability, and secure single glass pane management. **vSAN** delivers high-performance storage with consistent integration with VMware vSphere and the entire VMware stack. Hewlett Packard Enterprise and VMware based solutions will benefit your business by supporting speedy application deployment, automation of operations and an overall better experience for the users by generating a system that is less expensive and is easier to manage.

HPE NVMe storage from Intel

With up to six times faster data transfer speeds than 6 Gbps SAS/SATA SSDs, the HPE NVMe SSDs from Intel bring extreme data throughput directly to the Intel Xeon processors. A single drive from the HPE NVMe SSD (460K IOPS) can now replace the performance of 7 SATA SSDs combined through an HPB (~500K IOPS). With the advent of the new high performance controller interface—NVMe (Non-Volatile Memory Express) the HPE NVMe SSDs are architected to deliver Quality of Service, reduced latency and leading performance. HPE NVMe SSDs from Intel provide advanced data integrity to safeguard against obscure errors, and contribute to the vSAN configuration's high reliability and preserve measured annual failure rates.

IT transformation

Contact your HPE representative today to learn more about transforming your IT infrastructure with Intel NVMe-enabled HPE ProLiant DL380 platform using vSAN.

Learn more at
ssd.hpe.com/recommendations

Our solution partner

Sign up for updates

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