Hewlett Packard Enterprise

intel

Supporting Monster Databases

Ed Tittel

- Optimize and improve your database workloads
- Combine on-premises and in-the-cloud assets
- Take advantage of all-flash Alletra storage arrays to boost performance and provide great user experiences

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IN THIS PAPER

Learn how HPE ProLiant Servers powered by Intel Xeon Scalable processors can support your enterprise database needs.

Highlights include:

- Support for large, complex, distributed DBMS environments
- Find preconfigured DBMS and storage servers compatible with Microsoft SQL Server, Oracle, MySQL, PostgreSQL, and more
- Use the HPE Database Performance Profiler (DPP) to improve and optimize DBMS workloads

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If there's any enterprise application or service that qualifies as a be-all and end-all, it has to be database management. Overall databases accommodate most, if not all, of the structured data in business use today. According to Research and Markets, in fact, the global database market in 2024 is expected to hit nearly $187B, and remains even higher than the white-hot AI market which is expected to come in at about $3B lower for the year. Unlike AI, however, databases have been an integral part of enterprise computing ever since enterprise computing and mainframes had their heyday from the late 1950s through the 1970s. Databases appear poised to remain essential, important, and even mission-critical for the foreseeable future.

Today's databases are growing ever larger as the global volume of data itself increases to reach historic levels. According to Big Data Analytics News, global data volume is expected to hit 147ZB (1ZB = 1 million terabytes, or TB) in 2024, and to surpass 180ZB in 2025. An appreciable part of that total, perhaps as much as 20% to 25%, comes from or lives in a database of some kind or another. Enterprises typically manage much of their key data—including sales, financials, HR, customer data, product information, and operational data—in some kind of database management system (DBMS) or another.

Managing databases across an enterprise involves more than "mere" database design, provisioning, and upkeep. It also means managing licenses and instances, and trading on-premises costs and controls against one or more private and public clouds (including vendor-specific clouds like those from Microsoft for SQL Server and Oracle for its massive database portfolio). This can be demanding for servers not just because of the gargantuan data volumes involved, but also because of the tricks and traps inherent in setting up and managing distributed database environments across multiple sites, and on private and public clouds. Things can get overly interesting in a hurry for those not prepared to embrace complexity, and to accommodate the crazy big and demanding workloads on which modern distributed database environments thrive and prosper.

Reduce Costs and Improve Performance

Optimizing user experiences and managing databases in a hybrid cloud environment is easier with HPE, thanks to the HPE Database Performance Profiler (DPP). This tool lets organizations understand and optimize their database workloads and run them on the right infrastructure mix to reduce costs and improve performance. The HPE DPP enables you to:

- Gain insights into workload and usage patterns.
- Consolidate server infrastructure and increase compute capability on fewer, well-placed CPUs.
- Optimize database licensing to reduce overall associated costs.
- Manage server and storage footprint.

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The HPE ProLiant DL360 Gen11 server is ideal for high-volume, low-latency online transaction processing (OLTP) workloads. Indeed, its Intel Xeon Scalable processors (2 processors, each with up to 64 cores) support millions of transactions per minute on Microsoft SQL Server 2022 without swamping those processors. High-performance NVMe drives in the HPE Alletra storage array enables this configuration to deliver the high transaction rates with very low latency.

The HPE ProLiant DL360 Gen11 Sever powered by Intel Xeon Scalable processors is highly scalable and compute-dense, which makes it ideal for high-performance database workloads. It is a rack-optimized, 1U 2P dense solution that can provide exceptional compute capability, upgraded high-speed data transfer, and memory depth at 2P compute levels. A silicon root of trust anchors server firmware to an HPE-specific ASIC, to create an immutable fingerprint for the CPU and system components that must match exactly with what's discovered before the server is allowed to boot. Visit HPE's ProLiant DL360 product page and click the Specifications tab for a complete list of its components, storage, software, power, and other capabilities, which include up to 20 EDSFF EXes NVMe SSD, plus 2 M.2 NVMe SSDs for resilient boot/system coverage.

Microsoft SQL Server 2022 Feature highlights

Businesses and organization seeking database satisfaction have lots of reasons to give Microsoft SQL Server 2022 a second—and even, a third—look. These include the following outstanding DBMS features:

- Intelligent query processing and query store simplifies and speeds database interactions, especially repeat maneuvers.
- Ordered clustered columnstore index speeds queries, offers better compression, and supports faster data load times.
- Improved memory management in large memory servers also boosts performance.
- Enhanced spinlock algorithms deliver improved scalability (improved concurrency and better use of CPU resources, faster access to data structures, and better performance under load (reduced contention and latency).
- Instant file initialization brings faster file operations, improved performance, and better handling for transaction logs.

All these changes, and others not covered here, mean that SQL Server 2022 runs faster and more reliably at scale, on premises and in the cloud (or both). For more information, please consult Microsoft Learn's What's New in SQL Server 2022.

HPE Alletra 6000 is a perfect storage solution for high-performance, high-volume database access. This array lets IT add on-demand, as-a-service storage to its existing choices. Alletra supplies intelligent, resilient storage with no single point of failure to provide guaranteed, 6-nines availability. Back this up with recovery SLAs for fast, integrated app-aware backup and recovery on-premises and in the cloud, including major DBMS environments (Microsoft SQL Server, Oracle DB and MySQL, and more).

Alletra is AI-driven to predict and prevent disruptions to storage, services and VMs. It includes predictive support automation with automated level 1 and level 2 support services, with direct access to critical resources via automated escalation. Best of all, HPE Alletra works as a consumable, data infrastructure as-a-service through HPE GreenLake.

Overall, the HPE family of Intel-powered ProLiant Servers is extremely adept at hosting DBMSes, including all the biggest names in that business. Indeed, HPE offers access to cloud-based DBMS services for those same platforms through its on-demand HPE GreenLake for Databases, on-premises and in the cloud. Organizations can count on HPE to support and protect their database investments however, whenever, and wherever they wish to put them to work.

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LEARN MORE

Now that you've learned how HPE ProLiant servers help businesses and organizations make the most of massive databases for inquiry, analysis, transaction processing, analytics, and so forth, you may want to dig into more details regarding specific database platforms. In particular, HPE offers pre-configured ProLiant servers powered by Intel Xeon Scalable processors for Microsoft SQL Server, Oracle, and MySQL, various PostgreSQL implementations, and IBM DB2. Visit the Database page at the HPE store for pointers to specific Intel-powered HPE ProLiant Server models such as DL320, DL 360, DL380, and HPE MSA Storage servers 2060, 2062, and more. You'll also want to visit the Modernize Your Infrastructure with HPE ProLiant Gen11 Servers page and for an Intel perspective, be sure to check out Accelerate and Protect with Intel.

HPE GreenLake