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Hyperconvergence for Databases

Independent scaling

Always-on storage efficiency

Predictable performance

Application and database availability

Designed for databases

Databases form the core of many enterprise applications, from online transaction processing (OLTP), data warehousing, and batch processing to business intelligence, report generation, and online analytical processing (OLAP). As the amount and types of data increase, flexible systems with predictable performance are needed to address database sprawl. By deploying Cisco HyperFlex™ All Flash or All NVMe configurations, you can run your database deployments on an agile platform that delivers insight in less time and at less cost.
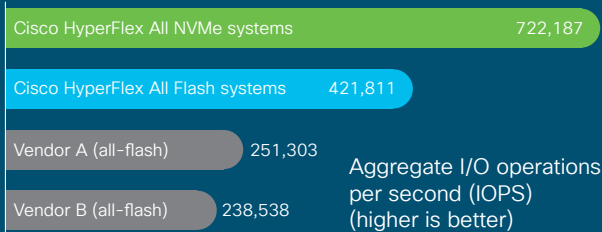
Enterprise application-ready solution

We provide the right platform for your database deployments and the applications that use them. The platform consists of Cisco HyperFlex All Flash or All NVMe nodes, an integrated network fabric, powerful data optimization, and unified management to bring the full potential of hyperconvergence to a range of enterprise workloads. With a solution that is faster to deploy, simpler to manage, and easier to scale than the current generation of systems, you can power enterprise databases and applications as your business needs dictate.

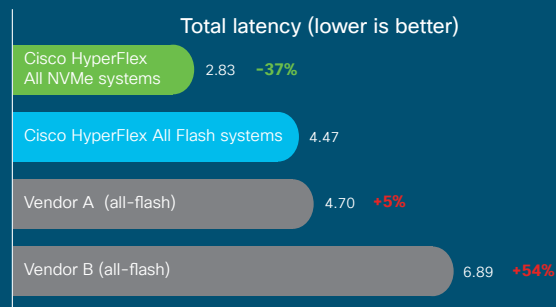## Cisco HyperFlex systems for Microsoft SQL, Oracle, or SAP HANA

- Closely match the needs of databases and applications.

- Reduce your storage footprint.

- Optimize your storage costs.

- Deliver predictable database performance.

- Keep enterprise applications and databases available.

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Performance matters

Cisco HyperFlex All NVMe systems	722,187
Cisco HyperFlex All Flash systems	421,811
Vendor A (all-flash)	251,303
Vendor B (all-flash)	238,538

Aggregate I/O operations per second (IOPS) (higher is better)

Source: Enterprise Strategy Group

Cluster performance scales linearly as additional virtual machines are provisioned.

Total latency (lower is better)

Cisco HyperFlex All NVMe systems	2.83	**-37%**
Cisco HyperFlex All Flash systems	4.47	
Vendor A (all-flash)	4.70	**+5%**
Vendor B (all-flash)	6.89	**+54%**

Source: Enterprise Strategy Group

Cluster latency is significantly reduced with the All NVMe systems.

Easy to deploy

Cisco HyperFlex systems are delivered as a preintegrated cluster that is up and running quickly. Integrated management detects new components, allowing this self-aware and self-integrating system to adapt quickly to changes in hardware configuration.

Scalable

Independent scaling allows you to closely match the resource needs of your database environments. You can start small and scale to support hundreds or thousands of users and petabytes of data. The entire cluster's solid-state disk (SSD) drives are combined into a single distributed, object-based data store. As you add nodes to the cluster to expand capacity, data is automatically rebalanced across the shared resources. Using thin provisioning, you can size your data store larger than the cluster and expand the cluster as databases grow.

Efficient data storage infrastructure

You can reduce your data footprint and optimize storage infrastructure costs. Deduplication and compression are built in to help you make more efficient use of storage capacity. The optional Cisco HyperFlex Acceleration Engine improves performance and increases compression ratios with faster and lower-latency data compression operations. More compression makes more efficient use of storage resources for databases. And unlike with solutions from other vendors, you don't have to disable these features to deliver the

high performance that databases and enterprise applications demand.

Proven and predictable performance

Driving performance at the end user level requires a holistic approach in designing your solutions. Simply adding low-latency storage is not enough. This is why we designed HyperFlex systems to have balanced high-performance. Configurations using All Flash and All NVMe nodes, together with our standard high-throughput network and fast computing, supports consistently high performance even to large databases. The distributed architecture provides every virtual machine access to high IOPS regardless of the physical location of the virtual machine. This capability is important for virtual machines running Oracle Database or RAC because they frequently need higher performance to handle bursts of application or user activity. All NVMe storage performs even faster (as shown by ESG testing) and is great for databases that require ultra-low latency.

High data availability

Your enterprise applications and databases need to run all the time. The innovative configuration of Cisco HyperFlex systems supports database mirroring and is resilient to failure. For example, systems configured with five or more nodes can keep running even if all drives fail on two nodes. In addition, built-in snapshots are also integrated with backup solutions such as Veeam to support disaster-recovery operations.

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Cisco HyperFlex All NMVe systems

- Intel® Optane™ SSD DC cache and Intel 3D NAND SSD capacity

- Fastest solution for ultra-latency sensitive databases

- HyperFlex innovations and Intel® Volume Management Device (VMD) enhances reliability, availability, and serviceability for PCIe storage

- Intel Optane technology reduces write cache cost per terabyte

Next steps

- Read the Cisco HyperFlex All NVMe At a glance

- Contact your Cisco or partner representative to discuss Cisco HyperFlex systems for your databases.

For more information

- Visit cisco.com/go/hyperflex

- Read the Oracle At-a-Glance

- Read the Microsoft SQL Solution Overview

- Read the SAP Hana White Paper

- Read the Enterprise Strategy Group report Mission-critical Workload Performance Testing of Different Hyperconverged Approaches on the Cisco Unified Computing System Platform (UCS)

- Read the Enterprise Strategy Group report Mission-critical Hyperconverged Workload Performance Testing on Cisco HyperFlex All NVMe with Intel Optane DC SSD