



# DataON™ Database HCI Platform for Microsoft SQL OLTP\*

Verified Intel® Select Solution that is optimized  
for high performance and high availability

## The Challenge



- Microsoft SQL Server\* OLTP system performance is critical
- Business continuity depends on maximizing transaction throughput, reliability, and high availability (HA) systems
- Customers need to plan for Microsoft SQL Server 2008 to 2017 migration

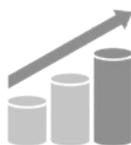
As one of the leading database platforms for business—from small and medium organizations to large enterprises—Microsoft SQL Server\* is at the center of operations for Online Transaction Processing (OLTP). For these organizations, computer system performance is critical to maximize transaction throughput, and reliability and high availability (HA) are necessary to keep business flowing smoothly. With mainstream support for Microsoft SQL Server 2008 and Microsoft SQL Server 2008 R2 ending in 2019, customers need to plan their migration to a platform that will not only continue to serve their businesses, but easily scale with them as they grow.

DataON™ S2D-5108 and S2D-5224 servers, using Intel® Select Solutions for Microsoft SQL Server, give businesses powerful OLTP performance. DataON's solution with two- and four-node clusters is optimized for Microsoft SQL 2017, achieving 10 million transactions per minute<sup>1</sup> with automatic failover to keep the business operating. The clusters can be configured as a standalone SQL application resource connected to the rest of the data center's systems, or as a hyper-converged infrastructure running Microsoft SQL Server 2017 alongside Microsoft Storage Spaces Direct\* 2016 and other enterprise applications. In either deployment, the solution is tuned for business performance and built for high availability.

## Featured Benefits



**Speed.** Intel® Xeon® Scalable processors offer the highest performance of Intel® processors for demanding data center workloads, delivering fast data processing and access to data with reduced blocking.



**Capacity.** In a hyper-converged infrastructure, locally attached storage devices are aggregated across nodes to increase capacity without sacrificing performance.



**Simplicity.** No external enclosures and storage cabling are needed with DataON's SQL Failover Clustering instance. Combined with mirrored volumes the system ensures SQL gets the highest throughput to maximize performance on mixed random IOPS workloads.

**Cost Savings.** Consolidating multiple instances on a single cluster helps reduce licensing fees and administrative overhead.



**Flexibility.** Multiple configurations allow deploying the best solution for today and in the future.

## The Solution



- Windows Server\* 2016 Storage Spaces Direct clusters optimized for Microsoft SQL 2017
- DataON HCI-based SQL Cluster validated with Intel® Select Solution
- SQL solutions tuned for business performance and built for high availability

## Two-Node DataON S2D-5108



## DataON S2D-5108 and S2D-5224 servers using Intel Select Solutions for Microsoft SQL Server 2017 with Microsoft Storage Spaces Direct\*

DataON S2D-5108 and S2D-5224 servers for Microsoft SQL Server 2017 are offered in two- and four-node configurations (Table 1) with optional deployments for the larger solution:

- **Two-node.** This configuration uses two DataON S2D-5108 servers with 14-core Intel® Xeon® Gold 6132 processors. The two-node configuration is designed for high performance on mixed workloads.
- **Four-node.** This configuration uses DataON S2D-5224 servers with either 14-core or 20-core Intel® Xeon® Gold 6148 processors. The four-node configurations are optimized for memory-heavy workloads, performance-sensitive workloads, and geo-independent workloads.

These DataON S2D-5108 and S2D-5224 servers using Intel Select Solutions for Microsoft SQL Server 2017 use only Intel® SSD Data Center Series drives with the PCIe\* interface for NVMe. Using NVMe delivers maximum storage performance with minimal latency in a clustered configuration. DataON's optimized deployments of Microsoft SQL Server 2017 on Intel®-based platforms delivers over 2X the performance of Microsoft SQL Server 2008 (Figure 2).<sup>1</sup>

Both configurations are designed to optimize Microsoft SQL Server 2017 performance with automatic failover capability to maintain a highly available database service.

Component	Two Nodes Standard		Four Nodes Standard      Premium		
	DataON™ Server Node	S2D-5108		S2D-5224	
Processor (GHz)/(Core)	Intel® Xeon® Gold 6132 processor 2.6/14-Core			Intel Xeon Gold 6132 processor 2.6/14-Core	Intel® Xeon® Gold 6148 processor 2.4/20-Core
Memory (GB)	DDR4	256 GB	DDR4	1024	2048
Raw Storage Intel® SSD DC Series	NVMe	8 TB	NVMe	16 TB	32 TB
Usable Storage	2-way Mirror	2.8 TB	3-way Mirror	3.7 TB	7.4 TB
Storage Data Network	RDMA	25 GbE	RDMA	50 GbE	100 GbE

Table 1. Hardware configurations for DataON Database HCI Platform for Microsoft SQL OLTP.\*

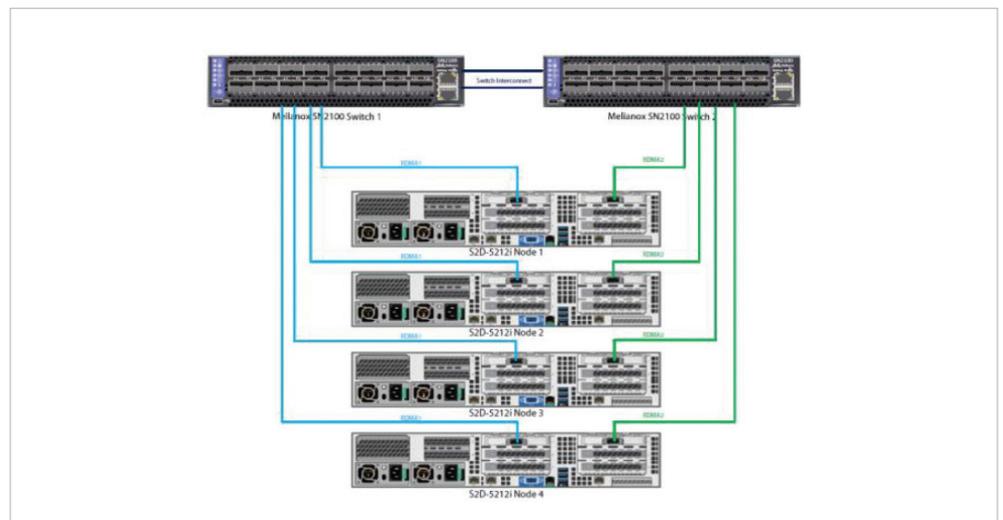


Figure 1. DataON S2D-5224 HCI Platform Connections Diagram

## The Result



DataON's solution with two-node and four-node clusters is optimized for Microsoft SQL\* 2017, achieving 10 million transactions per minute<sup>1</sup> with automatic fail-over to keep the business operating.

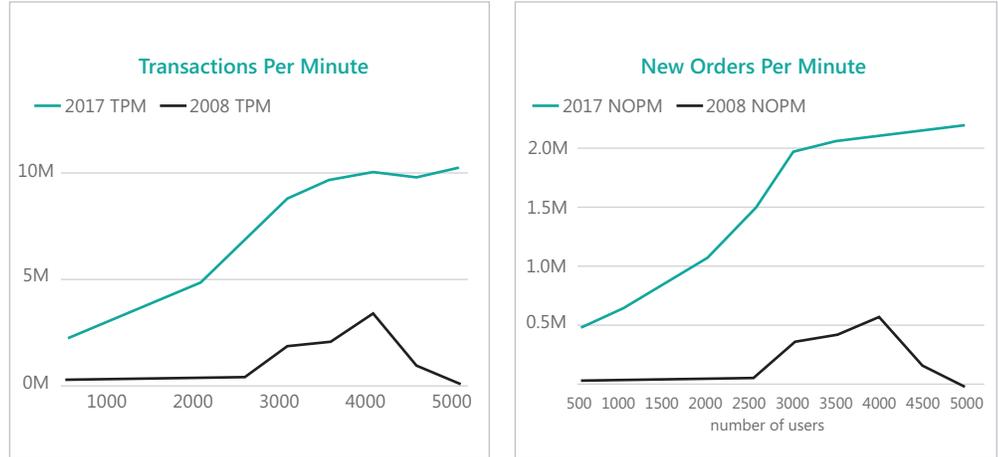


Figure 2. Microsoft SQL Server\* 2017 performance compared to Microsoft SQL Server\* 2008 using DataON Database HCI Platform for Microsoft SQL OLTP.\*1

## Fundamental Intel® Technologies

The following technologies help enhance security and performance in DataON Database HCI Platform for Microsoft SQL OLTP:

- **Trusted Platform Module (TPM) 2.0.** Protects the system start-up process by ensuring it is tamper-free before releasing system control to the operating system. TPM 2.0 also provides secured storage for sensitive data, such as security keys and passwords, and it performs encryption and hash functions.
- **Intel® Turbo Boost Technology.** Accelerates processor and graphics performance for peak loads, automatically allowing processor cores to run faster than the rated operating frequency if they're operating below power, current, and temperature specification limits.
- **Intel® Hyper-Threading Technology (Intel® HT Technology).** Enables multiple threads to run on each core, which ensures that systems use processor resources more efficiently. Intel HT Technology also increases processor throughput, improving overall performance on threaded software.
- **Intel® SpeedShift Technology.** Allows the processor to quickly select its best operating frequency and voltage for optimal performance and power efficiency without intervention from the operating system.



"DataON S2D HCI running Windows Server 2016 for SQL 2017 shows a significant performance boost for data intense workloads. There are tangible benefits to aggregating locally attached storage across nodes in a cluster. This increases capacity, but it does so without sacrificing performance."

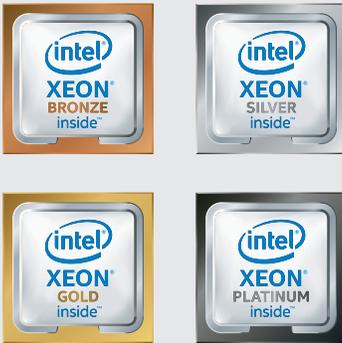
Melody Zacharias  
Microsoft MVP Data Platform

## Intel® Xeon® Scalable Processors

Intel Xeon Scalable processors are the future-forward platform for cloud and enterprise data centers.

This processor family offers:

- High scalability to support a wide range of existing and emerging workloads for a modern hybrid cloud business strategy
- The efficiency and density required to deliver strong virtualized infrastructure performance gains
- Intelligence to deliver exceptional resource utilization and agility
- A foundation for more secure data center solutions, enabling improved data and workload integrity and supporting regulatory compliance



## A Verified Configuration for Optimized Solutions

DataON Database HCI Platform for Microsoft SQL OLTP is a fast path to maximizing database processing with workload-optimized configurations verified for Intel Xeon Scalable processors.

## About DataON

DataON™ is the leader in Microsoft® Windows Server software-defined solutions. Our company is focused on customers who have made the “Microsoft choice” to deploy Microsoft applications, virtualization, data protection, and hybrid cloud services. Our enterprise-level solutions, delivered as a complete, turnkey experience, are designed to provide the highest level of performance, manageability, and security offered. DataON is a division of Area Electronics Systems, Inc.

For more information on all Intel Select Solutions, visit [www.intel.com/selectsolutions](http://www.intel.com/selectsolutions).

For more information on DataON servers and solutions, visit [www.dataonstorage.com](http://www.dataonstorage.com).

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<sup>1</sup> The HammerDB® benchmark for OLTP testing was the benchmark test used to optimize the configurations. This benchmark's OLTP workload is derived from TPC-C® and as such, is not comparable to published TPC-C results.

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